A POINT SCALE OF PERFORMANCE TESTS

VOLUME I
CLINICAL MANUAL

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A POINT SCALE OF PERFORMANCE TESTS

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A POINT SCALE OF PERFORMANCE TESTS

VOLUME I
CLINICAL MANUAL

BY
Mary GRACE ARTHUR, PH.D., 1883—
PSYCHOLOGIST, ST. PAUL CHILD GUIDANCE CLINIC

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One is encouraged to believe that a project in which so many have been interested cannot be without value.

G. A.

ST. PAUL, *February, 1930*

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CHAPTER I

THE SCALE AND ITS USES

This point performance scale was built in response to a general need for a non-verbal scale that could be used satisfactorily in clinical work. The psychological clinician must resort frequently to the use of performance tests in cases where the highly verbalized Binet tests are inadequate, first, because of foreign language handicap; second, because of speech or hearing defect; third, because the Binet scale fails to give an adequate report of the intelligence of the individual in whom verbal and non-verbal abilities are markedly unequal in their development.

In attempting to employ performance tests, however, the clinician is confronted with a number of serious difficulties. Many non-verbal tests are available, but comparatively few possess any high degree of discriminative value. When the best of these are selected, one is then faced with the difficulty of comparing results from the separate tests. They have been standardized against different populations. From one set of norms all subnormal and unstable cases have been excluded. For another, we have no indication of the selection of cases. For a third, a definite percentage of feeble-mndied are included. Obviously, we cannot compare the scores of a patient on tests standardized against three such groups with any assurance that a difference in rating will indicate any real difference in ability. Moreover, even with a satisfactory selection of tests and adequate standardization, a method of combining results from the separate

tests is needed which on non-verbal tests will yield a final rating comparable to the Binet mental age and serving as wide a purpose.

It was in the attempt to overcome some of these difficulties and to develop a non-verbal scale, in the results of which the clinician could have confidence as in those of the Binet, that this project was undertaken.

The point performance scale in its present form is the result of the work of a number of years. Work on the methodology was begun in 1917 under the direction of Herbert Woodrow, then of the Department of Psychology of the University of Minnesota. The results from that study were published under the title, "An Absolute Intelligence Scale: A Study in Method."[1] As the method gave promise of further usefulness, work was continued with the same tests on a larger group of subjects. These results were reported under the more modest title, "A Group Point Scale for the Measurement of Intelligence."[2] The PE of measurement according to Nygaard's formula between the intelligence quotients obtained with that scale and those of the Kuhlmann-Binet for 275 children was 2.60. Evidently, the method had value.

The next step was the application of this method to existing data on non-verbal tests. A tentative scale[3] was constructed, the success of which I have never been able wholly to understand. It had everything the matter with it: many of the tests were only partially standardized; they were standardized against different populations,

[1] Arthur and Woodrow, "An Absolute Intelligence Scale: A Study in Method," *Journal of Applied Psychology*, III (1919), 118–137.

[2] Arthur, Grace, "A Group Point Scale for the Measurement of Intelligence," *Journal of Applied Psychology*, X, 3 (June, 1926), 228–244.

[3] Arthur, Grace, "A New Point Performance Scale," *Journal of Applied Psychology*, IX, 4 (December, 1925), 390–416.

and in some cases "six years" meant 6.0, while in others it meant 6.5 years. But in spite of these glaring faults, it worked surprisingly well; well enough to justify an adequate standardization of the scale as a whole. A preliminary report of the results of the re-standardization of the scale was published in June, 1928.[4]

The complete report of this final standardization project is being published in two volumes. This book, Volume I, is intended as a clinical manual. From it has been excluded everything not of immediate use in the daily routine of the psychological examination. Of the various sets of norms obtained, only the chronological age norms for Form I of the scale, and the retest norms of Form II are included in this volume, as these are the ones for which the clinician will have daily use.

Volume II is intended for those who are interested in the details of scale construction. In it will be given a full account of the work of standardization, together with alternative forms of scoring and their results. Binet mental age norms and sex norms also will be supplied in Volume II for both forms of the scale.

The scale in its present form is intended as a clinical instrument to be used by adequately trained clinicians in psychological and psychiatric clinics. It is hoped that its use will be limited to such clinics, as many of the tests, owing to a puzzle element, are especially susceptible to practice effect. The simple, game-like form of the tests renders them attractive to patients of all ages. The chronological age norms for Form I of the scale were based upon the scores of about 1,100 public school children of a good middle-class "American" district. The retest

[4] Arthur, Grace, "The Re-standardization of a Point Performance Scale," *Journal of Applied Psychology*, XII, 3 (June, 1928), 278–303.

(chronological age) norms of Form II were based upon the scores of 535 of the same children who had already been tested on Form I.

From a number of different angles, this scale has proved its usefulness. Its primary value is to supplement the Binet rating. This supplementary rating is of value in diagnosis whether it confirms the Binet rating, as it does in the majority of cases, or whether it shows an unequal development between verbal and non-verbal abilities. In the latter case, a complete re-examination should be made a year later to determine whether the difference in rating on the two scales was a true one, or only an accidental difference due to lack of reliability on the part of either or of both scales. For fifty per cent of the cases tested on Form I, the IQ falls within five points of the IQ obtained on either the Kuhlmann-Binet or the Stanford-Binet scale. This means that results obtained with this form of the performance scale agree almost as closely with those obtained with either of these Binet scales as Stanford-Binet IQ's agree with retests on the Stanford-Binet scale.[5]

For 535 of the public school children who were tested on Form I of the performance scale and retested on Form II approximately one year later, the PE of measurement (Nygaard's formula[6]) between the IQ's obtained with the two forms for ages 6 to 16, inclusive, at the date of the retest, are presented in Table I. These values range from 4.52 at the six year level, to 8.45 at the fourteen year level. These, it will be noted, tend to run higher than the PE between IQ's obtained with Form I and either the

[5] Terman, Lewis M., *Intelligence of School Children* (Boston: Houghton Mifflin Company, 1919), p. 142.

[6] Nygaard, P. H., "Advantages of the PE of Measurement," *Journal of Educational Psychology*, XIV (1923), 407–413.

TABLE I

PE of Measurement between IQ's Obtained on Form I and Form II of the Performance Scale

*C.A.**	*Number of Cases*	*PE*
6 years	40	4.52
7 years	53	5.01
8 years	51	5.91
9 years	51	6.93
10 years	56	6.99
11 years	59	6.72
12 years	52	6.19
13 years	52	6.40
14 years	34	8.45
15 years	42	8.20
16 years	45	7.97

*Throughout this work, a chronological age of six years is regarded as including 6.0 to 6.9 years, a chronological age of seven, as including 7.0 to 7.9, etc.

Kuhlmann-Binet or Stanford-Binet scale. This may be due to the smaller number of cases used in determining the retest norms. It must be remembered, however, that the tests used for comparison with the Binet scales were all given under clinic conditions, while those used for comparison of ratings obtained with Forms I and II of the performance scale were given in the public schools, and were subject to the factors making for distraction that seldom can be entirely eliminated from a school situation. Moreover, the former were given on the same day, while an average interval of a year elapsed between the giving of Form I and Form II.

Although the main purpose of this scale is to support the Binet rating, as it does for a majority of patients, it is of definite value in helping us to understand and to deal effectively with a number of different conditions that are met with among clinic patients. The remainder of this chapter will be devoted to the description of such situa-

tions and of typical cases used to illustrate them. Needless to say, if these situations had been represented often enough in our clinic experience, the data would be presented in quantitative form. As they are not, the material is presented merely to suggest types of situations upon which the performance scale ratings may throw some light, and some of the kinds of behavior that can be observed during the giving of the performance tests.

For some patients, the performance scale ratings tend to vary markedly from their Binet ratings. John earns high marks at school and has received three special promotions. His Stanford Achievement Test rating yielded an EQ of 133. On Form I of the performance scale he earned an IQ of 86. The school reported him as brilliant. The boys considered him a "nut." The director of his group at the Y.M.C.A. agreed with the boys. John could not compete with those of his own kind in a single boyish activity. He was as truly dull in that field as he was bright in the classroom. For individuals of his sort, either a Binet rating or a performance scale rating will tell only part of the story.

Illustrating the same point from a different angle is Billy. He is a well-grown ten-year-old boy, free from any gross physical defects. He is good-natured and friendly. He gets along well with boys of his own age, and is among the leaders of his group. He is a steady worker. His teacher cannot understand why a boy who tries so hard and seems so capable should be so hard to teach. At the age of eight years, Billy could not read at all in spite of regular school attendance. His Binet IQ proved to be 76. On the performance scale, however, he earned an IQ of 99. At the end of two years of faithful effort, he earned a grade rating of "End of Low I" on the Gray

Oral Reading Test. On the Stanford Achievement Test, Primary B, his grade rating in reading was II.6. Billy is now in a special class for the subnormal, because he cannot learn in the ordinary classroom. But when it is time for him to leave school and get a job, we shall need to remember that he is subnormal only in spots, and that outside of the field of the Three R's with their various ramifications, he can probably compete successfully with other boys of his own age. Here again, either the Binet rating alone, or the performance rating alone, would be misleading. For Billy is no more a typically subnormal boy than he is a wholly normal one.

The performance score contributes a valuable corrective to the Binet rating in cases where environmental conditions have varied widely from those of the average child. In children of obviously low-grade intelligence from families of good social standing, one occasionally meets a condition of over-training that results in a Binet score that is misleading. In such cases the Binet rating tends to reflect the environment, while the performance rating gives a safer index of the ability of the child to meet new situations. The converse of this is the case of the child who has been shifted around from place to place without being permitted to stay in any one environment long enough to make a satisfactory adjustment. He may make a poor showing on the Binet tests, and meet adequately the situations of the performance scale.

In cases where a valid Binet rating cannot be obtained because of language difficulty, speech defect, or emotional repression, the performance scale rating can be used as a substitute. Care should be taken, however, to verify the original findings by a retest on Form II six months or a year later. It should be remembered (see Volume

II) that Italian children tend to rate significantly higher on the performance scale than on the Binet, and that Jewish children, on the contrary, tend to do better on the Binet scales. Care must be taken with the non-English-speaking Italian child, therefore, not to overrate his general ability on the basis of his performance scale rating. It is equally necessary to guard against underrating the ability of the non-English-speaking Jewish child because of his poor performance score.

Another type of clinic patient with whom care must be taken not to accept the performance scale rating at face value, is the patient suffering from acute emotional disturbance. Blanche affords an illustration of this situation. She was an unmarried mother. She was as physically immature in most respects as other thirteen-year-old girls. Her baby was two months old. It was dying, slowly and unpleasantly. She was sentenced to watch it. When brought to the clinic for examination, Blanche earned a Binet IQ of 80, and a performance IQ of 67. Neither rating agreed with the school report of "very bright." She had been advanced one year beyond other girls of her age. It seemed possible that her lack of success on these scales might be the result of the emotional stress which she was suffering, and that although she was obviously unable to meet new situations adequately in her present emotional state, she might have better success in giving out material previously learned. The Stanford Achievement Test was given, therefore, with results that justified both the school history and the precaution against judging an emotionally disturbed patient on the basis of ability to meet new situations. The fact that the Binet rating and the performance scale rating corroborated each other to some extent in this

case, probably meant nothing more than that the patient was no better able to meet the new situations presented by the one scale than she was to meet the new situations presented by the other.

For clinic patients, the performance scale, in addition to the rating it supplies, serves a most useful purpose as a shock absorber. It provides an opportunity to make a satisfactory contact with the patient, and to convince him that he is working in a friendly, non-faultfinding atmosphere. He finds the material interesting. Self-confidence is induced, inasmuch as failure is less evident, and can be more easily rationalized for him than on either of the Binet scales. Transfer from the non-verbal material of this scale can be made to the Binet material without loss of rapport, and verbal responses can be obtained in this way from patients who have refused to give adequate coöperation in other test situations. Rose offers an example of the scale as a means of contact making.

She was a shy, repressed, adolescent girl who had been referred to the clinic because of her refusal to talk either at home or at school. She did well in written work at school, but refused obstinately to take any part in recitations or class discussions. Investigation revealed the fact that Rose belonged to a large, noisy, demonstrative family. Her shyness and reserve had been aggravated by teasing from the immediate family, and by unfavorable comment from friends and relatives. The mother dreaded the clinic study, for fear the patient would be judged a "dumb-bell" on the basis of a refusal to respond.

Rose arrived at the clinic in a somewhat defensive mood. She did not intend to be made to talk. She was conducted to a table in the examining room, and put to work on the performance scale. The briefest instructions

were given. They were given in a tone so low that several times she had to ask to have them repeated. The expected position was thus reversed: she was put in the position of the questioner, instead of that of the one to be questioned. After a time she began to make spontaneous comments on the various test situations. By the time the performance scale was completed, a normal conversation was being carried on, and a Binet examination could be given with the assurance of her full coöperation.

The chief advantages of the performance scale as a shock absorber lie in the apparent simplicity of the material, and in the fact that no verbal response is demanded. Working under conditions where no speech is required for forty-five minutes or an hour frequently results, as with Rose, in spontaneous speech on the part of shy, self-conscious patients.

As stated above, the performance scale provides also an excellent opportunity to observe the behavior of patients in a variety of situations. Sometimes we find a slow change of "mental set," resulting in slow adjustment to new situations. This is of great importance in dealing with some types of problems, especially those of foster home placement. Roy is the outstanding clinic example of this kind of difficulty. He was an adoptive failure. He had been tried in four good homes, but each one had asked to have him removed, as he was unresponsive and failed to fit into the family group. He had accepted everything that had been done for him, without comment and without any apparent emotion. Moreover, his school work was unsatisfactory. The family history was most unpromising. The clinic was prepared to find him an "unplaceable" child. When he arrived for examination, we saw, to our surprise, an attractive twelve-

year-old boy. He was thin and worried looking, but his general appearance was pleasing, and his manner was friendly. Why couldn't so promising a specimen make a satisfactory adjustment in any of these rather exceptional homes that had been offered him?

In watching his work on the performance scale, it was noted that though he had no difficulty in understanding the various tasks as they were presented, he took so long in adjusting to each new task that his score was poor. And this, in spite of the fact that he was doing more than satisfactory work for a boy of his age on the more difficult end of the scale. He earned a Binet IQ of 110. Yet he was not making a satisfactory school adjustment. The placing agency was interviewed. It was advised to keep Roy until a suitable home could be found that would be willing to keep him for a fairly long time, whether he was liked or not. This was done. A home was found that seemed to meet these conditions. But three weeks after the placement, the report from this new home, too, was unsatisfactory. The foster parents wanted him removed. He was accomplishing nothing in school. However, at the end of two months the home found him tolerable, and the school was recognizing that he had possibilities. At the end of four months he returned to the clinic for an interview. He had gained six pounds. The worried look was gone. The foster parents liked him and wanted to keep him. The school reported his work as very satisfactory. He was well liked by the other children. He had needed not only time to adjust to the new situation, but sympathetic understanding of his difficulty in making the adjustment.

A different type of behavior observable in work with the performance scale is that of a child referred to the

clinic for "obstinacy." Here was found a slowness in comprehending the various tasks, that was in marked contrast to the ability to perform them once they were understood. Slowness of attack had been interpreted as unwillingness to attempt tasks, and the child had been scolded and punished for refusal to obey. Comprehension was then still further interfered with by self-distrust and fear of punishment. One child who had been returned from two foster homes for this kind of "obstinacy" made a successful adjustment in the detention home after her behavior had been explained, and has adjusted well in the foster home in which she has since been placed.

Other characteristics of behavior that are most readily observed in work with the performance scale are a tendency to persevere in the face of difficulty, or to give up too easily; to conform to the rules of the game or to try to "get by" with slight irregularities; to stammer in some situations and not in others. Stammerers whose trouble began upon school entrance will often complete work on the performance scale talking freely without a trace of stammer, but begin to stammer violently if work on the Stanford-Binet scale is attempted.

In many of these cases cited as illustrations, any other set of non-verbal tests would furnish equally good opportunities for observing the behavior of the patient. The important thing is to keep the tests the same, and conditions as nearly constant as possible in order that the behavior may be observed under conditions that are similar for all patients.

For all quantitative data and for information in regard to the standardization of the present scale, the examiner is referred to Volume II.

CHAPTER II

THE SCALE: FORM I

FORM I of the Point Performance Scale was first described in the December, 1925, issue of the *Journal of Applied Psychology*.[1] It is made up of the following tests:

1. Knox Cube.
2. Seguin Form Board.
3. Two-Figure Form Board (Pintner).
4. Casuist Form Board (Knox).
5. Manikin (Pintner).
   Feature-Profile (Knox and Kempf).
6. Mare and Foal (Healy: modified form).
7. Healy Picture Completion I.
8. Porteus Maze.
9. Kohs Block Design.

Of these, the Porteus Maze has been added to the scale since the 1925 report.

MATERIALS

For the scale in its present form, the materials needed are as follows:

1. Knox Cube. Five one-inch wooden cubes, similar in every respect.

2. Seguin Form Board: Stoelting[2] catalogue No. 27156. Insist upon a properly finished specimen, in which board and insets are smooth to touch. The board should have a dark stain; the insets, a light finish.

3. Two-Figure Form Board: Stoelting catalogue No. 27167. It

[1] Arthur, Grace, "A New Point Performance Scale," *Journal of Applied Psychology*, IX, 4 (December, 1925), 390–416.

[2] C. H. Stoelting Company, 424 North Homan Avenue, Chicago, Illinois.

is necessary to examine the parts to make sure that they slip readily into place when similar pieces are interchanged. It is often necessary to smooth one side of a piece with sandpaper to give more play.

4. Casuist Form Board: Stoelting catalogue No. 27168. Here again it is necessary to use sandpaper if supposedly interchangeable parts cannot be readily interchanged.

5. Manikin: Stoelting catalogue No. 27170.

Feature-Profile: Stoelting catalogue No. 27183.

6. Mare and Foal: Stoelting catalogue No. 27154.

7. Healy Picture Completion I: Stoelting catalogue No. 34053. The following order for the arrangement of the blocks was fixed upon with the help of Dr. Florence Goodenough, then of the Minneapolis Child Guidance Clinic. For convenience the numbers are written on the backs of the blocks.

Top row: 1, bucket; 2, m. bottle; 3, wheel; 4, blank; 5, pipe; 6, shoe; 7, dog; 8, purse; 9, b. window; 10, fruit; 11, tie.

Second row from top: 12, cup; 13, knife; 14, chicken; 15, blank; 16, hatchet; 17, blank; 18, basket; 19, blank; 20, pumpkin; 21, blank; 22, s. bird; 23, football; 24, baby.

Third row from top: 25, baseball; 26, cat; 27, blank; 28, candle; 29, bottle; 30, hat; 31, blank; 32, fish; 33, glove; 34, mouse; 35, sprinkling can; 36, blank.

Bottom row: 37, flowers; 38, d. cat; 39, blank; 40, f. bird; 41, books; 42, blank; 43. c. window; 44, clock; 45, scissors; 46, stool; 47, cage; 48, s. cat; 49, log; 50, cherries.

Be sure that the edges of the insets are kept pasted down firmly, as children are quick to see and to select blocks showing signs of much use.

8. Porteus Maze Test: Porteus mazes for five years to Adult II, inclusive.

9. Kohs Block Design Test: Stoelting, no catalogue number. On the back of Design II, paste a red one-inch square. On the back of Design I paste a one-inch square, the upper half of which is yellow, and the lower half, red. As the blocks become soiled with use, they can be replaced at small cost with sets obtained from toy departments.

We have recorded scores on six by eight inch filing cards, ruled.

A stop watch with a time-out attachment is more useful than one without, in cases where a child, apparently through with his

work, goes back to it either to make a minor correction or to wreck the whole thing and start over.

Two pencils with good points and of intriguing newness.

PROCEDURE

The examiner should be seated opposite the patient for the sake of ease in handling the materials. A low table is necessary for the younger children. It is absurd to expect a child who can barely reach the insets of the Seguin Form Board to make a valid score. The Knox cubes are placed on the table. The rest of the materials are placed on the floor beside the examiner in such a position as to be hidden from the patient, when he is seated, by the table. We have found it convenient to stack the tests in the following order: Seguin Form Board on the bottom, Two-Figure Form Board next, Casuist Form Board next, Manikin and Feature-Profile in separate boxes next, Healy I next, with the Porteus Maze and Kohs material on top.

In clinic work, the preparation of the patient for the examination is done by the worker by whom the appointment is made. Children under twelve years of age are told that they are coming to the clinic to play games. Patients over twelve years of age are told that they are going to be given a great many different kinds of tests, so that we can find out which kinds of things they do best. In meeting the patient in the waiting room, the examiner makes the same difference in his approach to the younger and older patients. After the initial contact is made and it is time to take the child to the examining room (from which all visitors are, of course, excluded), say to the child under twelve, "Let's go into this other room and see what games we can find in there." To

the patient over twelve say: "Let's go into this other room to work."

When seated at the table, point to the test material on the floor and say: "These all start easy, and they all get hard. When they are easy, don't get caught by thinking they are too easy and getting careless; and when they get hard, remember that no one ever makes a perfect score." The order in which the tests are presented appears to have a noticeable effect upon the norms. The present order should therefore be adhered to.

(1) *Knox Cube Test.*[3] Place four of the cubes two inches apart in a horizontal row in front of the patient. Say: "Watch." Tap blocks 1, 2, 3, 4 in the order named, with the fifth cube, at the rate of about one tap per second. Begin at the left of the patient.

Patient

4 3 2 1

Examiner

Put down the fifth cube between 2 and 3, but nearer the patient and say: "You make it touch the same ones that I made it touch." Present the series in the following order:[4]

A	1234	E	1423	I	14324
B	12343	F	1324	J	142341
C	12342	G	13124	K	132413
D	1432	H	13243	L	143124

For subjects who tend to begin at the opposite end

[3] Pintner, R., and Paterson, D. G., *A Scale of Performance Tests* (New York: D. Appleton and Company, 1923), p. 68.

[4] For convenience in scoring, these series, which have been taken from Pintner and Paterson, have been arranged in order of difficulty for our subjects and re-lettered.

of the row, praise for correct sequence and give full credit, but continue to demonstrate with series A until it is exactly reproduced. Place the fifth block always in the same position before the subject at the end of each series. Older subjects often think that the position of this block is part of the test unless it is kept constant. At the first failure, again caution against careless error. Continue the test through three successive failures. Repeat in full as the last test of the scale. Say: "Let's see if you can do the one with these blocks again, as well as you did the first time." Record successes letter by letter, leaving a space for each failure. The score is the average of the two trials.

(2) *Seguin Form Board.* Place the board with the star toward the subject for all three trials. Stack blocks, with the subject watching, in the following order:

At the upper-right corner of the board, from the position of the subject, place the ☆ ; on that, the ▱ , and the ○ on top. In the middle pile, place the ✚ on the bottom, the ⬭ next, then the ◠ , and the □ on top. At the upper-left corner of the board, place the ⬭ at the bottom, then the △, and the ▭ on top. Say: "This is easy. The game is to see how fast you can do it. When I say 'Go,' put these back as fast as you can. Ready. Go."

For the second trial say: "That was good. Do you want to try it again? See how much faster you can do it this time. Ready. Go."

For the third trial say: "Good! It was — seconds faster this time. Try it once more. Perhaps you can do it still faster. Ready. Go." It is important that the blocks be taken out and stacked by the examiner rapidly, as a leisurely manner largely offsets the instruc-

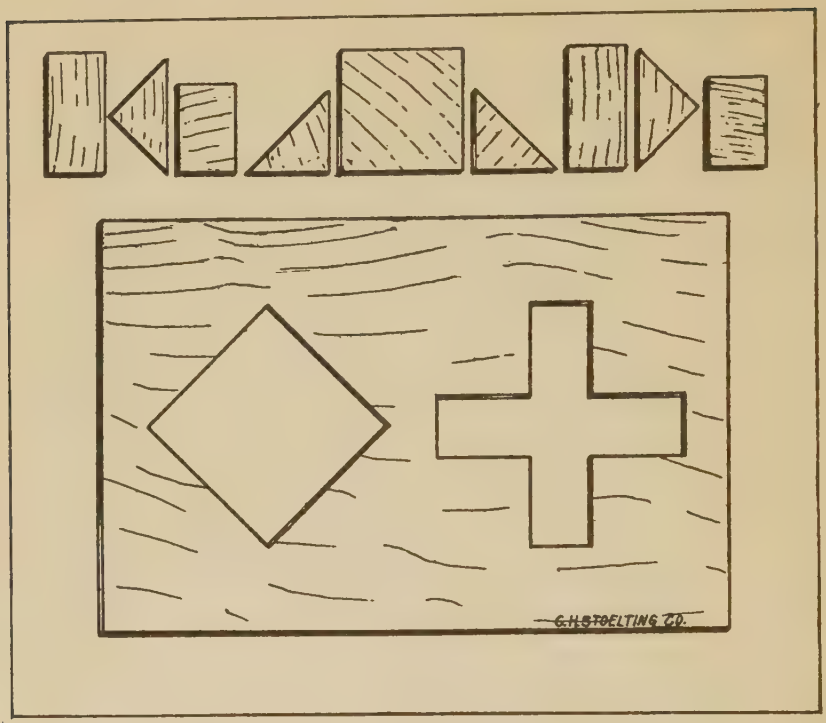

FIGURE 1. TWO-FIGURE FORM BOARD

tion to be fast. There should be no suggestion of hurry, however, as this tends to lower speed. Say nothing during a trial, unless, as in the case of some young children, the patient stops work altogether, and needs to be encouraged to continue. It is necessary to watch alert subjects to make sure that they do not "jump the gun."

Record time for each trial. The shortest time of the three trials is used as the score.

(3) *Two-Figure Form Board.*[5] Say: "Turn and look at that picture (behind subject) so that you cannot see

[5] Pintner and Paterson, op. cit., p. 36.

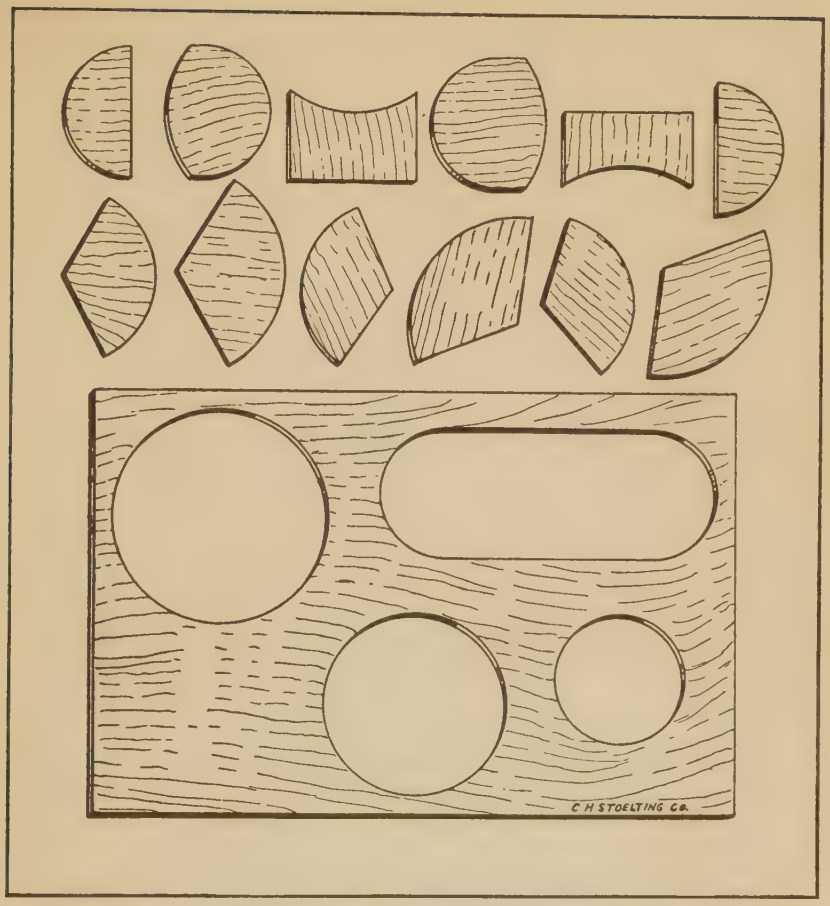

FIGURE 2. CASUIST FORM BOARD

while I fix the next game." This does away with peeping, and does not meet with resistance from young, nervous children as does closing the eyes. Place the board with the cross at the right of the patient. Arrange the pieces as shown in Figure 1. Have subject again face the table. Say: "Put these back as fast as you can. Ready. Go." Allow not more than five minutes. Give help if it is

needed, after the time limit is reached. If the test is completed, record time. If it is not, record partial success such as "cross O. K." Note habits and methods of work for clues to kind and amount of praise necessary to obtain the patient's best effort throughout the remaining tests. The object of giving this test is to initiate the subject into puzzle-test procedure. It serves as a shock absorber for the young child, and for the nervous, self-distrustful adolescent. The score is not included in the final rating.

(4) *Casuist Form Board.*[6] Say: "Now turn your head again, so that you cannot see." Place the board with the two small circles toward the subject. Arrange the pieces as shown in Figure 2. Have the patient again face the table. Say: "Put these back as fast as you can. Ready. Go." Allow five minutes. Record time if the test is completed, or if it is not, the number of forms completed at the end of five minutes.

(5) *Manikin.*[7] Say: "Turn your head again." Arrange pieces as shown in Figure 3. Have the subject again face the table. Say: "Now put these together." Record results. The following are the commonest solutions, arranged arbitrarily in approximate order of value.

a. No error.
b. Both legs going in the same direction. This is common only among the brighter children, and is scored as no error.
c. One or both arms up or out.
d. One reversal: arms interchanged or legs interchanged.
e. Arms interchanged and legs on edge, so that feet point upward.
f. Legs interchanged and one arm not exactly in socket.
g. One hand in socket.
h. Two hands in sockets.
i. Two reversals: arms interchanged and legs interchanged.

[6] Pintner and Paterson, op. cit., p. 38.

[7] Pintner and Paterson, op. cit., p. 45.

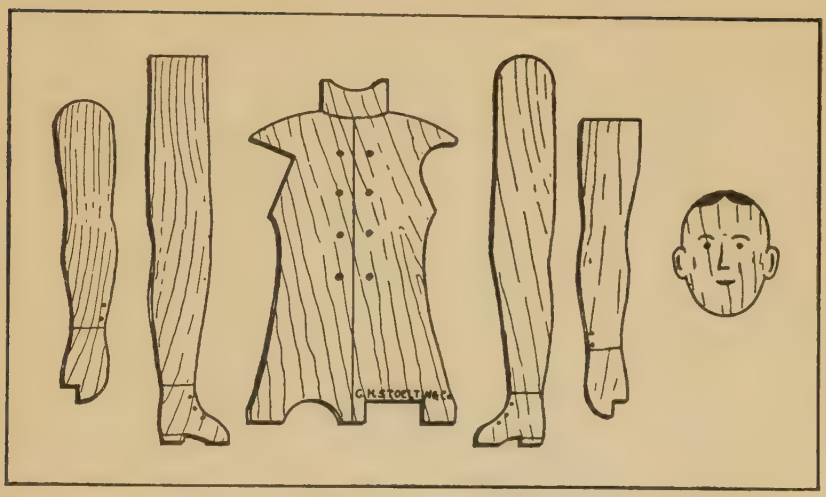

FIGURE 3. MANIKIN

j. Arms or legs not used.
k. Legs interchanged or placed in line with outside line of body. Hands in sockets.
l. One arm and leg interchanged.
m. Both arms and legs interchanged.
n. Only the head in place.
o. Complete failure.

If the patient has passed preceding tests at about the eight year level or better, omit the Manikin until the Feature-Profile has been given, as success on the latter presupposes success on the former.

Feature-Profile.[8] Omit this test if the patient's score on the Manikin was below *c*. If it is given say, "Turn your head again." Arrange the pieces as shown in Figure 4. Say: "Put these together as fast as you can. Ready. Go." If the patient turns a piece face down, turn it face up again. Allow five minutes. Record time,

[8] Pintner and Paterson, op. cit., p. 57.

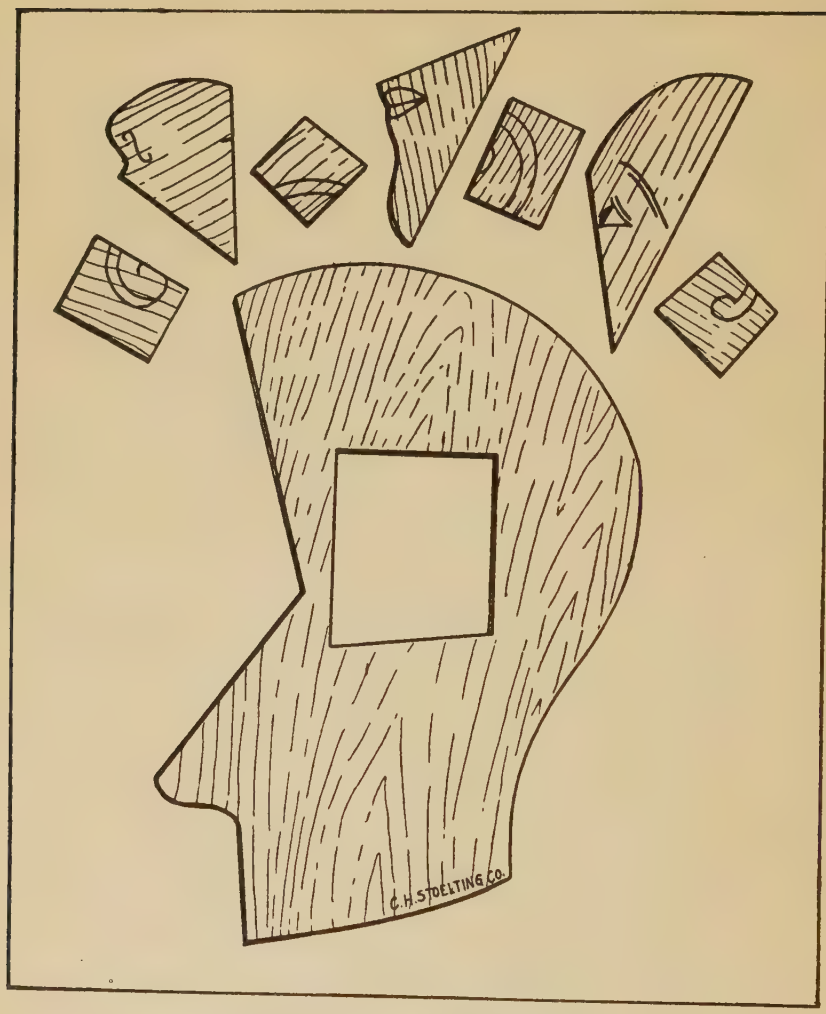

FIGURE 4. FEATURE-PROFILE

if test is completed. If it is not, record partial success as "ear O. K." or "profile O. K."

(6) *Mare and Foal.*[9] Say: "Turn your head again." Turn the picture face down, with the top edge nearest

[9] Pintner and Paterson, op. cit., p. 27.

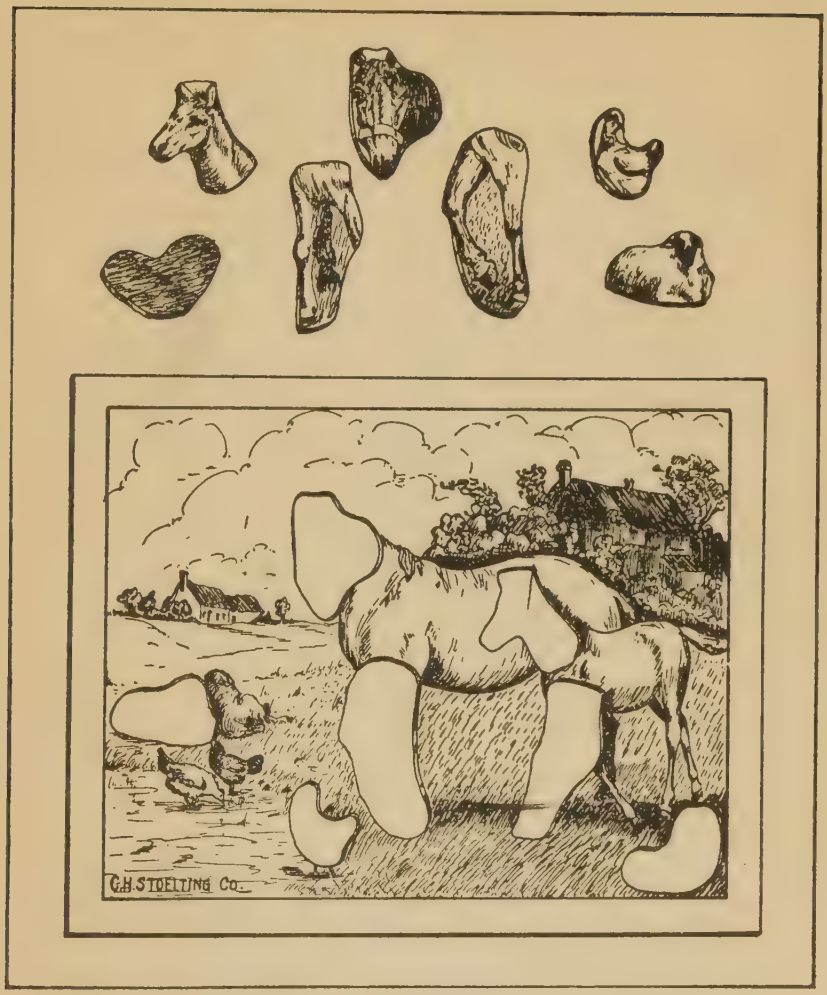

FIGURE 5. MARE AND FOAL

the examiner. The pieces will fall out, and will be found to be approximately in the order shown in Figure 5, and will need little more than to be turned over. Turn the picture face up and say, "Put these back as fast as you can." Record time.

TABLE II

Raw Score Values for Healy Picture Completion I

B. WIND 1		DOG 2		CAT 3	
B. Wind	100	Dog	64	Cat	81
C. Wind	32	Baby	2	Baby	4
Blank	2	Blank	2	Chicken	2
Cage	1	B. Wind	1	Cup	1
		Cat	2	D. Cat	7
		D. Cat	2	Fruit	1
		Hatchet	1	M. Bottle	4
		Mouse	1	F. Bird	2
		S. Bird	1	S. Cat	2
		Stool	1	S. Bird	1
				Stool	1
FOOTBALL 4		HAT 5		BASKET 6	
Football	84	Hat	65	Basket	55
Baseball	21	Baby	3	Bucket	2
Cherries	2	Books	1	Cherries	7
F. Bird	1	Cat	2		
Pumpkin	1	Chicken	1		
		Dog	1		
		F. Bird	1		
		Mouse	2		
		Purse	3		
LOG 7		F. BIRD 8		CHICKEN 9	
Log	52	F. Bird	87	Chicken	58
Blank	1	Basket	2	Baby	1
Hatchet	6	Cage	7	Cat	2
Stool	2	Cherries	3	Cherries	2
		S. Bird	18	Cage	1
				D. Cat	1
				F. Bird	1
				Hatchet	1
				Mouse	1
				S. Bird	2

Maximum score 646.

(7) *Healy Picture Completion I.*[10] Take the picture from the box and place it before the patient, but leave the

[10] Pintner and Anderson, *The Picture Completion Test* (Baltimore: Warwick and York, 1917), p. 58.

blocks covered until instructions have been given, as impulsive patients tend to begin work before they understand what they are to do. Say: "See this picture of all these people doing different things. Parts of the picture are left out. Any one of these blocks (exhibiting them for a moment) will go into any one of these spaces. The game is to find the very best block for each space. Find the block that will make the most sensible picture. Do you see this man? What has he lost? (Help, if necessary, till the patient comprehends the situation presented in this practice picture.) All right. You find the wheel. Now you do the others the same way, and find the block for each space that makes the most sensible picture." Allow five minutes. It is often necessary to tell the patient that this is not a speed game. When the patient has finished, if time has not expired, say: "Now look it over and make sure that you have it all just the way you want it." Record the blocks in place when the test is completed. Turn the board face down so that the blocks will fall out, and replace the blocks in the box according to their respective numbers. Score according to the raw score values given in Table II.

If the patient wants to remove a piece in order to substitute another, show him how to push it up from beneath so that he can lift it out more easily.

(8) *Porteus Maze Test.*[11] Begin with the five year maze for all patients. Place it with the number toward the patient. Hold it in position with the tips of the fingers. Hand patient a pencil. Say: "Suppose you were driving down this road in your automobile. You could get out here, as this is an open road. (Point to the opening at the end of the fourth road, and indicate without touching

[11] Porteus, S. D., *Guide to Porteus Maze Test* (Training School, Vineland, N. J., 1924), pp. 20–29.

the paper the motion of passing out through the open space.) And you could get out here, as this road is open. (Point to opening at the end of the sixth road, and again indicate motion of passing out through the open space.) But there is a fence here. This road is closed. (Point to the seventh road and to the line across the end of it.) You couldn't get out here. And this road is closed, and this road is closed, and this road is closed, and this road is closed. (Point to lines blocking exits to fifth, third, second, and first roads in order.) Now, you take your pencil and show me how you would go down this road (begin at S and make a line not more than one-eighth of an inch long) and drive out the first open road you come to." If the patient fails by going into a blocked road or by going out the sixth road, a second trial on a new blank is allowed, and the instructions are repeated verbatim.

There are six possibilities which determine the credit for this test:

1. The patient goes out the first open road (fourth road) on the first trial. Full credit one year.

2. The patient goes out the second open road (sixth road) the first trial, and on the second trial goes out the correct opening. Full credit, one year.

3. The patient goes out the second open road both trials. Half credit, one-half year.

4. The patient goes into a blocked road the first trial and goes out the correct opening the second trial. Half credit, one-half year.

5. The patient goes into a blocked road the first trial and goes out the second opening the second trial. No credit. (The general instructions state that the testing proceeds until there have been two successive failures, but in this case, while no credit is allowed, the test is not counted as a failure in the above sense.)

6. The patient goes into a blocked road both trials. Failure. No credit.

Allow two trials. Record on score card as 5, if full credit was earned, or as 5/2 if half credit was earned. In case of total failure, record with a dash followed by a comma to separate it from the score for the six year maze. Place used mazes directly in the waste basket, or lay them aside, face down.

Place the six year maze before the patient with the number toward him. Say: "Start here (indicating S) and drive out here (point to arrow at the other end) without getting into any closed roads, and without driving over any fences. You may stop to think any time you like, so long as you keep your pencil still." Allow two trials. If the patient immediately cuts across a line, he should be stopped and the injunction against crossing lines emphasized. The instructions are repeated verbatim and a second trial is given. Record as 6, 6/2, or —, according to the credit earned: one year for success on the first trial, one-half year for success on the second trial, or zero for failure on both trials. Place the seven year maze before the patient and say, "Now start here (pointing to S) and drive out here (pointing to arrow) without going into any closed roads, and without driving over any fences." Allow two trials. Record as 7, 7/2, or —, according to the credit earned.

Place the eight year maze before the patient. Say: "Start here and find your way out the open road." Indicate S for the start, but do not point to the exit. If the child asks, "Where is the open road?" say, "You will have to find it for yourself." If he asks, "Is this the open road?" pointing to the exit, say, "Yes. You could find it for yourself, couldn't you!" Allow two trials. Score as for mazes six and seven.

Repeat the eight year maze procedure with the nine,

ten, and eleven year mazes. For the nine year maze give equal credit if either the longer or shorter route out is taken. Repeat this same procedure for the twelve and fourteen year mazes. But allow *four trials* for each. Repeat this same procedure for Adult Maze I and II. Allow two trials for each. Continue testing through two successive failures. Assume a basal age of four years. Add one year for every full credit earned, and one-half year for every half credit earned on mazes five to eleven inclusive.

If both the twelve and fourteen year mazes are passed, add together the number of trials taken for both and give additional credit as follows:

Sum of trials in 12 and 14 mazes	*Credit to be added to score already obtained on mazes 5 to 11, incl.*
2 trials	5 years
3 trials	4 years
4 trials	3 years
5 trials	2½ years
6 trials	2 years
7 trials	1½ years
8 trials	1 year

If the twelve year maze is passed, and the fourteen year maze is failed, credit one year if the twelve year maze is passed on trial 1, 2, or 3. Credit one-half year if the twelve year maze is passed on the fourth trial.

If the fourteen year maze is passed after the twelve year maze has been failed, credit is given as follows:

14 year maze	*Credit to be added to score already obtained*
1 trial	2 years
2 trials	1½ years
3 trials	1 year
4 trials	½ year

For Adult Maze I and II, score as for other two trial mazes, without penalizing for taking a longer route.

The following precautions should be observed:

(a) Do not allow the patient to correct his own error by retracing his course. He should be stopped as soon as an error is made, and given a new test sheet. Say: "You cannot get out that way. Begin again, here." An error consists in crossing an imaginary line across the opening to a blocked passage. Bringing the patient back to the starting point after an error, is intended to impress him with the seriousness of making a mistake. However, no explicit warning as to the need for care should be given. This procedure serves also to safeguard against accidental success up to the point where the previous error occurred.

(b) Never allow the patient more trials than the instructions provide for, even though you do not intend to allow credit for success on the additional trial, as the extra practice may give him an undue advantage on the mazes to be presented later.

(c) Never allow the patient the preliminary practice of tracing the course of the maze in the air with pencil or finger. If the patient persists in doing this, he is told to keep his hands off the table until he is ready to begin to draw.

(d) It is inadvisable to use the same test blank for more than one trial.

(e) Never allow an error to go unpenalized, no matter how slight or how quickly corrected it may be, unless it is very obviously a slip of the pencil due to poor motor control. In tracing the correct course around a maze, the patient may inadvertently run across a line that is not intended as a hazard. This is not penalized. The child is merely warned to "stay in the road."

(f) The patient should also be warned against lifting the pencil from the paper after a trial is begun. No penalty is attached to this, but the warning is repeated as often as is necessary.

(g) For foreign children or for deaf children it is necessary to use the five year maze and sometimes the six year maze as a demonstration form.

(9) *Kohs Block Design Test.*[12] Take four of the cubes

[12] Kohs, S. C., *Intelligence Measurement* (New York: The Macmillan Company, 1923), p. 70.

and place them before the patient. Say: "Have you ever seen any blocks like these?" (Note if patient has a set or has ever played with one.) "You see (or if patient is familiar with them, "You remember") they are red on one side (point), blue on another (point), yellow on another (point), and white on another (point). On this side they are yellow and blue, and on this side they are red and white. All the blocks are just alike: each block is just like every other block."

Place Trial Card 1 before the patient, leaving room between the card and the edge of the table for him to build the design with the blocks. Say: "You take your four blocks and make a big red square like this one." Give whatever help is necessary either verbally or by putting the blocks into place. Break up the design built of blocks and say, "Now make one just like this," and present Trial Card 2. Again give whatever help is necessary. Insist upon the design being in correct position.

Present Design I. Say: "Now make this one. This (pointing to the red) is supposed to be red, and this (pointing to the blue) is supposed to be blue." This procedure is necessary to keep bright young patients from trying to find colors on the blocks to match those of the design. Give whatever help is necessary for completion of the design, *after the time limit has elapsed.* Of course, in such case, no credit is given.

Proceed in similar fashion with Design II. Name the colors of the design. Help, if the design is not completed within the time limit. This extended practice is intended to offset in some measure the advantage possessed by those patients who have had these sets of blocks as toys.

Record time. Score, penalizing for excess time, ac-

TABLE III

Raw Score Values for Kohs Block Design Test

Design number	*Score value*	*Points to be subtracted for excess time*	
		1 Point	*2 Points*
I	3	21″ and over	
II	5	31″ and over	
III	6	21″ to 35″	36″ and over
IV	7	31″ to 1′ 0″	1′ 1″ and over
V	7	36″ to 1′ 5″	1′ 6″ and over
VI	7	36″ to 1′ 0″	1′ 1″ and over
VII	7	41″ to 1′ 10″	1′ 11″ and over
VIII	8	41″ to 50″	56″ and over
IX	9	56″ to 1′ 10″	1′ 11″ and over
X	9	1′ 56″ to 2′ 10″	2′ 11″ and over
XI	8	1′ 46″ to 2′ 30″	2′ 31″ and over
XII	9	2′ 26″ to 2′ 40″	2′ 41″ and over
XIII	9	2′ 21″ to 2′ 33″	2′ 34″ and over
XIV	9	2′ 26″ to 2′ 40″	2′ 41″ and over
XV	9	2′ 41″ to 3′ 0″	3′ 1″ and over
XVI	10	2′ 41″ to 3′ 5″	3′ 6″ and over
XVII	11	2′ 41″ to 2′ 55″	2′ 56″ and over

Maximum score 133.

cording to the raw score values given in Table III. Do not count moves or deduct for excess moves. We find no significant difference in discriminative value between scores with errors penalized, and scores with excess moves ignored. The decision as to what constitutes a move must be largely individual, and as the performance of some patients is much easier to score in this respect than that of others, we feel that the reliability of the test will be increased by limiting the scoring to time only.

Present designs in the following order: I, II, III, IV, V, VI, VIII, VII, IX, XI, X, XII, XIV, XIII, XV, XVI, XVII. When the designs are presented in this

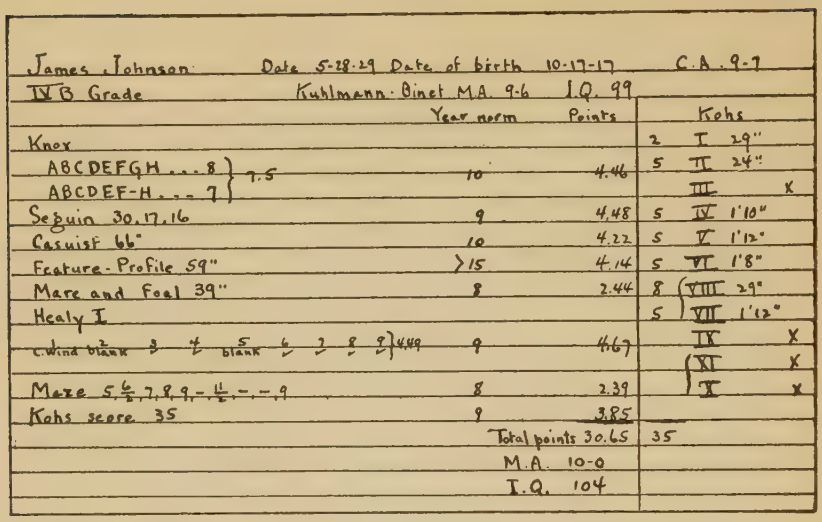
James Johnson Date 5-28-29 Date of birth 10-17-17 C.A. 9-7
IV B Grade Kuhlmann-Binet M.A. 9-6 I.Q. 99
Year norm Points Kohs
Knox
ABCDEFGH . . . 8 } 7.5
ABCDEF-H . . . 7 } 10 4.46 2 I 29" 5 II 24" III X
Seguin 30.17.16 9 4.48 5 IV 1'10"
Casuist 66" 10 4.22 5 V 1'12"
Feature-Profile 59" >15 4.14 5 VI 1'8"
Mare and Foal 39" 8 2.44 8 VIII 29" 5 VII 1'12"
Healy I
cubing blank 3 4 blank 4 3 8 8 } 4.49 9 4.67 IX X
XI X
Maze 5 6/8 7 8 9 - 11/12 - - - 9 8 2.39 I X
Kohs score 35 9 3.85
Total points 30.65 35
M.A. 10-0
I.Q. 104

FIGURE 6. SAMPLE SCORE CARD, FORM I

order, we find that the test need be continued through only three successive failures instead of through the five recommended by the Kohs manual. A further saving of time can be effected by having the patient break up the design made of blocks that he has just completed, while the examiner is reaching for the next design to be presented.

The minimum time for giving this performance scale as a whole has been found to be 35 minutes. The maximum time required for any subject is 90 minutes. The mode falls between 45 minutes and 60 minutes. Undue lengthening of time is more likely to be due to awkwardness of the examiner in handling materials than to slowness of response on the part of the patient. However, when a slow patient is encountered, there is nothing to be done but to give all the time that is needed to obtain an adequate rating.

TABLE IV

Combined Point Scale, Form I

C.A.	Knox I and II		Seguin		Casuist, (Time)		Manikin and Feature Profile		Mare and Foal		Healy I		Maze		Kohs		Total
	Score	Pts.	Score	Pts.	Score	Pts.	Score	Pts.	Score	Pts.	Score	Pts.	Score	Pts.	Score	Pts.	
5	3.40	X‡	29.95	X	1 O.K.	X	Rev.*	X	96.31	X	73.21	X	6.15	X	1.53	X	X
6	4.90	1.44	25.05	0.79	3 O.K.	0.98	Man. O.K.**	0.80	69.71	0.66	159.88	1.31	7.08	0.87	4.95	0.85	7.70
7	6.10	2.78	21.50	1.75	O.K. 215″	1.84	Prof. O.K.†	1.28	48.69	1.52	254.97	2.42	8.17	1.73	12.37	1.82	15.14
8	6.51	3.28	19.10	2.86	128	2.71	Prof. O.K.	1.97	39.78	2.35	333.98	3.32	9.25	2.59	19.78	2.78	21.86
9	6.91	3.78	17.33	3.79	96	3.33	F.P. O.K.†† 204	2.66	33.77	3.02	412.98	4.22	10.61	3.43	31.91	3.68	27.91
10	7.27	4.21	15.55	4.71	72	3.96	145	2.97	30.89	3.44	458.72	4.79	11.97	4.27	43.25	4.28	32.63
11	7.49	4.45	14.75	5.27	63	4.35	107	3.32	28.00	3.85	504.45	5.36	12.89	4.78	54.58	4.89	36.27
12	7.70	4.69	13.94	5.82	57.25	4.66	96.5	3.50	25.72	4.33	522.71	5.64	13.29	5.03	65.77	5.40	39.07
13	7.80	4.76	13.41	6.25	51.50	4.97	86.0	3.68	24.12	4.68	536.0	5.85	13.69	5.29	76.95	5.91	41.39
14	7.86	4.83	12.88	6.68	45.75	5.28	75.5	3.86	22.74	5.04	548.0	6.06	14.09	5.54	84.29	6.25	43.54
15	7.91	4.91	12.47	7.00	40.00	5.58	65.0	4.04	21.36	5.39	560.56	6.27		5.54	91.63	6.58	45.31

‡Throughout the tables, X is used to represent an arbitrary zero.

*One reversal. †Profile correct.

**Manikin correct. ††Feature-profile correct.

Raw score norms were obtained for each test for age groups five to fifteen years, inclusive. The discriminative value of each test between successive age levels was found by means of the formula,

$$DV = \frac{Av_2 - Av_1}{\frac{PE_2 + PE_1}{2}}$$

in which Av_2 is the average of the higher age group, Av_1 is the average of the lower age group, PE_2 is the probable error of the higher group, and PE_1 is the probable error of the lower group.

The values obtained by this formula were regarded as points. The better the test, the greater its discriminative value, and therefore the larger the number of points acquired by it at each age level. By summing these points for any given test, point norms were obtained. By interpolation, point values were found for every possible score occurring between the raw score norms of the test. By extrapolation, point values were also assigned to scores falling outside the range of these norms. The process of test construction is described more fully in Volume II. By summing the point norms of all the tests at each level, total point norms were obtained. This combined scale is presented in Table IV. In Table V are given point values for all possible scores obtainable on each test. The raw score of the patient on each test is converted into points by means of this table. These point values are totalled and converted into mental age by reading from Table VI. Intelligence quotients are then calculated in the usual manner.

TABLE V

For Determining the Point Value of Any Score, Form I

(1) KNOX CUBE TEST

C. A.	*Score*	*Points*	*C. A.*	*Score*	*Points*	*C. A.*	*Score*	*Points*
Less than								
5 yr. norm	0.0	−3.26	6 year	....	...	12 year	....	...
	0.5	−2.78		5.0	1.55		8.0	5.00
	1.0	−2.30		5.5	2.11		8.5	5.53
	1.5	−1.82		6.0	2.67		9.0	6.05
	2.0	−1.34	7 year	....	...		9.5	6.58
	2.5	−0.86		6.5	3.28		10.0	7.10
	3.0	−0.38	8 year	....	...		10.5	7.62
5 year	....	...		7.0	3.89		11.0	8.14
	3.5	+0.10	10 year	....	...		11.5	8.67
	4.0	0.58		7.5	4.46		12.0	9.19
	4.5	1.06						

(2) SEGUIN FORM BOARD

C.A.	*Score*	*Points*	*C. A.*	*Score*	*Points*	*C. A.*	*Score*	*Points*
Less than								
5 yr. norm	50*	−3.23		32	−0.33		19	2.91
	49	−3.07		31	−0.17		18	3.42
	48	−2.91		30	−0.0	9 year	..	...
	47	−2.75	5 year	..	...		17	3.95
	46	−2.59		29	+0.15		16	4.48
	45	−2.43		28	0.31	10 year	..	...
	44	−2.26		27	0.48		15	5.09
	43	−2.10		26	0.64	11 year	..	...
	42	−1.94	6 year	..	...		14	5.78
	41	−1.78		25	0.80	12 year	..	...
	40	−1.62		24	1.07		13	6.58
	39	−1.46		23	1.34	14 year	..	...
	38	−1.30		22	1.61		12	7.36
	37	−1.14	7 year	..	...		11	8.14
	36	−0.97		21	1.98		10	8.92
	35	−0.81		20	2.44		9	9.70
	34	−0.65	8 year	..	...		8†	10.48
	33	−0.49						

*Deduct 0.1611 for each second above 50.

†Add 0.7804 for each second below 8.

TABLE V (*Continued*)

(4) CASUIST FORM BOARD (TIME)

TEST NOT COMPLETED

C.A.	*Score*	*Points*
Less than 5 year norm	0	−0.47
5 year	1 O.K.	X
	2 O.K.	+0.49
6 year	3 O.K.	0.98

TEST COMPLETED

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	300	0.99		265	1.34		230	1.69
	299	1.00		264	1.35		229	1.70
	298	1.01		263	1.36		228	1.71
	297	1.02		262	1.37		227	1.72
	296	1.03		261	1.38		226	1.73
	295	1.04		260	1.39		225	1.74
	294	1.05		259	1.40		224	1.75
	293	1.06		258	1.41		223	1.76
	292	1.07		257	1.42		222	1.77
	291	1.08		256	1.43		221	1.78
	290	1.09		255	1.44		220	1.79
	289	1.10		254	1.45		219	1.80
	288	1.11		253	1.46		218	1.81
	287	1.12		252	1.47		217	1.82
	286	1.13		251	1.48		216	1.83
	285	1.14		250	1.49	7 year	215	1.84
	284	1.15		249	1.50		214	1.85
	283	1.16		248	1.51		213	1.86
	282	1.17		247	1.52		212	1.87
	281	1.18		246	1.53		211	1.88
	280	1.19		245	1.54		210	1.89
	279	1.20		244	1.55		209	1.90
	278	1.21		243	1.56		208	1.91
	277	1.22		242	1.57		207	1.92
	276	1.23		241	1.58		206	1.93
	275	1.24		240	1.59		205	1.94
	274	1.25		239	1.60		204	1.95
	273	1.26		238	1.61		203	1.96
	272	1.27		237	1.62		202	1.97
	271	1.28		236	1.63		201	1.98
	270	1.29		235	1.64		200	1.99
	269	1.30		234	1.65		199	2.00
	268	1.31		233	1.66		198	2.01
	267	1.32		232	1.67		197	2.02
	266	1.33		231	1.68		196	2.03

TABLE V (*Continued*)

(4) CASUIST FORM BOARD (TIME)

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	195	2.04		152	2.47		109	3.08
	194	2.05		151	2.48		108	3.10
	193	2.06		150	2.49		107	3.12
	192	2.07		149	2.50		106	3.13
	191	2.08		148	2.51		105	3.15
	190	2.09		147	2.52		104	3.17
	189	2.10		146	2.53		103	3.19
	188	2.11		145	2.54		102	3.21
	187	2.12		144	2.55		101	3.23
	186	2.13		143	2.56		100	3.25
	185	2 14		142	2.57		99	3.27
	184	2.15		141	2.58		98	3.29
	183	2.16		140	2.59		97	3.31
	182	2.17		139	2.60	9 year	96	3.33
	181	2.18		138	2.61		95	3.35
	180	2.19		137	2.62		94	3.38
	179	2.20		136	2.63		93	3.41
	178	2.21		135	2.64		92	3.43
	177	2.22		134	2.65		91	3.46
	176	2.23		133	2.66		90	3.48
	175	2.24		132	2.67		89	3.51
	174	2.25		131	2.68		88	3.54
	173	2.26		130	2.69		87	3.56
	172	2.27		129	2.70		86	3.59
	171	2.28	8 year	128	2.71		85	3.62
	170	2.29		127	2.73		84	3.64
	169	2.30		126	2.75		83	3.67
	168	2.31		125	2.77		82	3.69
	167	2.32		124	2.79		81	3.72
	166	2.33		123	2.81		80	3.75
	165	2.34		122	2.83		79	3.77
	164	2.35		121	2.85		78	3.80
	163	2.36		120	2.86		77	3.83
	162	2.37		119	2.88		76	3.85
	161	2.38		118	2.90		75	3.88
	160	2.39		117	2.92		74	3.90
	159	2.40		116	2.94		73	3.93
	158	2.41		115	2.96	10 year	72	3.96
	157	2.42		114	2.98		71	4.00
	156	2.43		113	3.00		70	4.05
	155	2.44		112	3.02		69	4.09
	154	2.45		111	3.04		68	4.13
	153	2.46		110	3.06		67	4.18

TABLE V (*Continued*)

(4) CASUIST FORM BOARD (TIME)

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	66	4.22		48	5.15		29	6.17
	65	4.26		47	5.20		28	6 22
	64	4.31		46	5.26		27	6.27
11 year	63	4.35	14 year	...	...		26	6.33
	62	4.40		45	5.31		25	6.38
	61	4.44		44	5.36		24	6.43
	60	4.51		43	5.42		23	6.49
	59	4.56		42	5.47		22	6.54
	58	4.62		41	5.52		21	6.59
12 year	...	...	15 year	40	5.58		20	6.65
	57	4.67		39	5.63		19	6.70
	56	4.72		38	5.69		18	6.75
	55	4.78		37	5.74		17	6.81
	54	4.83		36	5.79		16	6.86
	53	4.88		35	5.85		15	6.91
	52	4.94		34	5.90		14	6.97
13 year	...	...		33	5.95		13	7.02
	51	4.99		32	6.01		12	7.07
	50	5.04		31	6.06		11	7.13
	49	5.10		30	6.11		10*	7.18

*Add 0.0534 for each second decrease in time score.

(5) MANIKIN AND FEATURE-PROFILE

C.A.	*Score*	*Points*
Less than 5 year norm	Complete failure	—1.60
	Head O.K.	—1.20
	2 reversals	—0.80
5 year	1 reversal	X
	One or both arms up or out	+0.40
6 year	Manikin O.K.	0.80
7 year	Profile O.K.	1.28
8 year	Profile O.K.	1.28

TABLE V (*Continued*)

(5) MANIKIN AND FEATURE-PROFILE

FEATURE-PROFILE COMPLETED

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	300	2.18		267	2.34		234	2.51
	299	2.18		266	2.35		233	2.51
	298	2.19		265	2.35		232	2.52
	297	2.19		264	2.36		231	2.52
	296	2.20		263	2.36		230	2.53
	295	2.20		262	2.37		229	2.53
	294	2.21		261	2.37		228	2.54
	293	2.21		260	2.38		227	2.54
	292	2.22		259	2.38		226	2.55
	291	2.22		258	2.39		225	2.55
	290	2.23		257	2.39		224	2.56
	289	2.23		256	2.40		223	2.56
	288	2.24		255	2.40		222	2.57
	287	2.24		254	2.41		221	2.57
	286	2.25		253	2.41		220	2.58
	285	2.25		252	2.42		219	2.58
	284	2.26		251	2.42		218	2.59
	283	2.26		250	2.43		217	2.59
	282	2.27		249	2.43		216	2.60
	281	2.27		248	2.44		215	2.60
	280	2.28		247	2.44		214	2.61
	279	2.28		246	2.45		213	2.61
	278	2.29		245	2.45		212	2.62
	277	2.29		244	2.46		211	2.62
	276	2.30		243	2.46		210	2.63
	275	2.30		242	2.47		209	2.63
	274	2.31		241	2.47		208	2.64
	273	2.31		240	2.48		207	2.64
	272	2.32		239	2.48		206	2.65
	271	2.32		238	2.49		205	2.65
	270	2.33		237	2.49	9 year	204	2.66
	269	2.33		236	2.50		203	2.66
	268	2.34		235	2.50		202	2.67

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TABLE V (*Continued*)

(5) MANIKIN AND FEATURE-PROFILE

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	201	2.68		158	2.90		115	3.25
	200	2.68		157	2.91		114	3.26
	199	2.69		156	2.91		113	3.27
	198	2.69		155	2.92		112	3.27
	197	2.70		154	2.93		111	3.28
	196	2.70		153	2.93		110	3.29
	195	2.71		152	2.94		109	3.30
	194	2.71		151	2.94		108	3.31
	193	2.72		150	2.95	11 year	107	3.32
	192	2.72		149	2.95		106	3.34
	191	2.73		148	2.96		105	3.35
	190	2.73		147	2.96		104	3.37
	189	2.74		146	2.97		103	3.39
	188	2.74	10 year	145	2.97		102	3.41
	187	2.75		144	2.98		101	3.42
	186	2.76		143	2.99		100	3.44
	185	2.76		142	3.00		99	3.46
	184	2.77		141	3.01		98	3.47
	183	2.77		140	3.02		97	3.49
	182	2.78		139	3.03	12 year	...	...
	181	2.78		138	3.03		96	3.51
	180	2.79		137	3.04		95	3.53
	179	2.79		136	3.05		94	3.54
	178	2.80		135	3.06		93	3.56
	177	2.80		134	3.07		92	3.58
	176	2.81		133	3.08		91	3.59
	175	2.81		132	3.09		90	3.61
	174	2.82		131	3.10		89	3.63
	173	2.82		130	3.11		88	3.64
	172	2.83		129	3.12		87	3.66
	171	2.83		128	3.13	13 year	86	3.68
	170	2.84		127	3.14		85	3.70
	169	2.85		126	3.15		84	3.71
	168	2.85		125	3.16		83	3.73
	167	2.86		124	3.16		82	3.75
	166	2.86		123	3.17		81	3.76
	165	2.87		122	3.18		80	3.78
	164	2.87		121	3.19		79	3.80
	163	2.88		120	3.20		78	3.82
	162	2.88		119	3.21		77	3.83
	161	2.89		118	3.22		76	3.85
	160	2.89		117	3.23	14 year	...	...
	159	2.90		116	3.24		75	3.87

TABLE V (*Continued*)

(5) MANIKIN AND FEATURE-PROFILE

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
14 year	74	3.88		55	4.21		36	4.53
	73	3.90		54	4.23		35	4.55
	72	3.92		53	4.24		34	4.57
	71	3.94		52	4.26		33	4.59
	70	3.95		51	4.28		32	4.60
	69	3.97		50	4.29		31	4.62
	68	3.99		49	4.31		30	4.64
	67	4.00		48	4.33		29	4.65
	66	4.02		47	4.35		28	4.67
15 year	65	4.04		46	4.36		27	4.69
	64	4.06		45	4.38		26	4.71
	63	4.07		44	4.40		25	4.72
	62	4.09		43	4.41		24	4.74
	61	4.11		42	4.43		23	4.76
	60	4.12		41	4.45		22	4.77
	59	4.14		40	4.47		21	4.79
	58	4.16		39	4.48		20*	4.81
	57	4.18		38	4.50			
	56	4.19		37	4.52			

*Add 0.0171 for each second decrease in time score.

(6) MARE AND FOAL

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than				134	−0.93		117	−0.51
5 yr. norm	150*	−1.33		133	−0.91		116	−0.49
	149	−1.31		132	−0.89		115	−0.46
	148	−1.28		131	−0.86		114	−0.44
	147	−1.26		130	−0.84		113	−0.41
	146	−1.23		129	−0.81		112	−0.39
	145	−1.21		128	−0.79		111	−0.36
	144	−1.18		127	−0.76		110	−0.34
	143	−1.16		126	−0.74		109	−0.32
	142	−1.13		125	−0.71		108	−0.29
	141	−1.11		124	−0.69		107	−0.27
	140	−1.08		123	−0.66		106	−0.24
	139	−1.06		122	−0.64		105	−0.22
	138	−1.03		121	−0.61		104	−0.19
	137	−1.01		120	−0.59		103	−0.17
	136	−0.98		119	−0.56		102	−0.14
	135	−0.96		118	−0.54		101	−0.12

*Deduct 0.0248 for each second increase in time score.

TABLE V (*Continued*)

(6) MARE AND FOAL

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	100	−0.09		68	0.74		36	2.77
	99	−0.07		67	0.78		35	2.88
	98	−0.04		66	0.82		34	2.99
	97	−0.02		65	0.86	9 year	...	...
5 year	...	...		64	0.91		33	3.13
	96	+0.01		63	0.95		32	3.27
	95	0.03		62	0.99		31	3.42
	94	0.06		61	1.03	10 year	...	...
	93	0.08		60	1.07		30	3.56
	92	0.11		59	1.11		29	3.71
	91	0.13		58	1.15	11 year	28	3.85
	90	0.16		57	1.19		27	4.06
	89	0.18		56	1.23		26	4.27
	88	0.21		55	1.27	12 year	..	....
	87	0.23		54	1.31		25	4.49
	86	0.26		53	1.36	13 year	..	...
	85	0.28		52	1.40		24	4.71
	84	0.31		51	1.44		23	4.97
	83	0.33		50	1.48	14 year	..	...
	82	0.35		49	1.52		22	5.23
	81	0.38	7 year	...	...	15 year	..	...
	80	0.40		48	1.58		21	5.49
	79	0.43		47	1.68		20	5.74
	78	0.45		46	1.77		19	6.01
	77	0.48		45	1.86		18	6.27
	76	0.50		44	1.96		17	6.52
	75	0.53		43	2.05		16	6.78
	74	0.55		42	2.14		15	7.04
	73	0.58		41	2.24		14	7.30
	72	0.60		40	2.33		13	7.56
	71	0.63	8 year	...	...		12	7.82
	70	0.66		39	2.44		11	8.08
6 year	...	...		38	2.55		10*	8.34
	69	0.70		37	2.66			

*Add 0.257 for each second decrease in time score.

TABLE V (*Continued*)

(7) HEALY PICTURE COMPLETION I

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than 5 yr. norm	0	−1.10		43	−0.46		85	0.18
	1	−1.09		44	−0.44		86	0.19
	2	−1.08		45	−0.43		87	0.21
	3	−1.06		46	−0.41		88	0.22
	4	−1.04		47	−0.40		89	0.24
	5	−1.03		48	−0.38		90	0.25
	6	−1.01		49	−0.37		91	0.27
	7	−1.00		50	−0.35		92	0.28
	8	−0.98		51	−0.34		93	0.30
	9	−0.97		52	−0.32		94	0.31
	10	−0.95		53	−0.31		95	0.33
	11	−0.94		54	−0.29		96	0.34
	12	−0.92		55	−0.28		97	0.36
	13	−0.91		56	−0.26		98	0.37
	14	−0.89		57	−0.24		99	0.39
	15	−0.88		58	−0.23		100	0.40
	16	−0.86		59	−0.21		101	0.42
	17	−0.84		60	−0.20		102	0.43
	18	−0.83		61	−0.18		103	0.45
	19	−0.82		62	−0.17		104	0.46
	20	−0.80		63	−0.15		105	0.48
	21	−0.79		64	−0.14		106	0.50
	22	−0.77		65	−0.12		107	0.51
	23	−0.76		66	−0.11		108	0.53
	24	−0.74		67	−0.09		109	0.54
	25	−0.73		68	−0.08		110	0.56
	26	−0.71		69	−0.06		111	0.57
	27	−0.70		70	−0.05		112	0.59
	28	−0.68		71	−0.03		113	0.60
	29	−0.67		72	−0.02		114	0.62
	30	−0.65		73	−0.00		115	0.63
	31	−0.64	5 year	. . .	. . .		116	0.65
	32	−0.62		74	+0.00		117	0.66
	33	−0.61		75	0.03		118	0.68
	34	−0.59		76	0.04		119	0.69
	35	−0.58		77	0.06		120	0.71
	36	−0.56		78	0.07		121	0.72
	37	−0.55		79	0.09		122	0.74
	38	−0.53		80	0.10		123	0.75
	39	−0.52		81	0.12		124	0.77
	40	−0.50		82	0.13		125	0.78
	41	−0.49		83	0.15		126	0.80
	42	−0.[illegible]47		84	0.16		127	0.81

TABLE V (*Continued*)

(7) HEALY PICTURE COMPLETION I

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	128	0.83		170	1.43		213	1.92
	129	0.84		171	1.44		214	1.94
	130	0.86		172	1.45		215	1.95
	131	0.87		173	1.46		216	1.96
	132	0.89		174	1.47		217	1.97
	133	0.90		175	1.48		218	1.98
	134	0.92		176	1.50		219	1.99
	135	0.93		177	1.51		220	2.00
	136	0.95		178	1.52		221	2.02
	137	0.96		179	1.53		222	2.03
	138	0.98		180	1.54		223	2.04
	139	0.99		181	1.55		224	2.05
	140	1.01		182	1.57		225	2.06
	141	1.02		183	1.58		226	2.07
	142	1.04		184	1.59		227	2.09
	143	1.05		185	1.60		228	2.10
	144	1.07		186	1.61		229	2.11
	145	1.08		187	1.62		230	2.12
	146	1.10		188	1.63		231	2.13
	147	1.11		189	1.65		232	2.14
	148	1.13		190	1.66		233	2.16
	149	1.14		191	1.67		234	2.17
	150	1.16		192	1.68		235	2.18
	151	1.17		193	1.69		236	2.19
	152	1.19		194	1.70		237	2.20
	153	1.20		195	1.71		238	2.21
	154	1.22		196	1.73		239	2.23
	155	1.23		197	1.74		240	2.24
	156	1.25		198	1.75		241	2.25
	157	1.27		199	1.76		242	2.26
	158	1.28		200	1.77		243	2.27
	159	1.30		201	1.78		244	2.28
6 year	...	...		202	1.80		245	2.29
	160	1.31		203	1.81		246	2.31
	161	1.32		204	1.82		247	2.32
	162	1.33		205	1.83		248	2.33
	163	1.34		206	1.84		249	2.34
	164	1.36		207	1.85		250	2.35
	165	1.37		208	1.87		251	2.36
	166	1.38		209	1.88		252	2.38
	167	1.39		210	1.89		253	2.39
	168	1.40		211	1.90		254	2.41
	169	1.41		212	1.91	7 year	...	...

TABLE V (*Continued*)

(7) HEALY PICTURE COMPLETION I

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	255	2.42		298	2.91		340	3.39
	256	2.43		299	2.92		341	3.40
	257	2.44		300	2.93		342	3.41
	258	2.45		301	2.94		343	3.42
	259	2.47		302	2.95		344	3.43
	260	2.48		303	2.96		345	3.44
	261	2.49		304	2.97		346	3.46
	262	2.50		305	2.99		347	3.47
	263	2.51		306	3.00		348	3.48
	264	2.52		307	3.01		349	3.49
	265	2.53		308	3.02		350	3.50
	266	2.54		309	3.03		351	3.51
	267	2.56		310	3.04		352	3.52
	268	2.57		311	3.05		353	3.53
	269	2.58		312	3.06		354	3.55
	270	2.59		313	3.08		355	3.56
	271	2.60		314	3.09		356	3.57
	272	2.61		315	3.10		357	3.58
	273	2.62		316	3.11		358	3.59
	274	2.63		317	3.12		359	3.60
	275	2.65		318	3.13		360	3.61
	276	2.66		319	3.14		361	3.63
	277	2.67		320	3.15		362	3.64
	278	2.68		321	3.17		363	3.65
	279	2.69		322	3.18		364	3.66
	280	2.70		323	3.19		365	3.67
	281	2.71		324	3.20		366	3.68
	282	2.73		325	3.21		367	3.69
	283	2.74		326	3.22		368	3.70
	284	2.75		327	3.23		369	3.72
	285	2.76		328	3.24		370	3.73
	286	2.77		329	3.26		371	3.74
	287	2.78		330	3.27		372	3.75
	288	2.79		331	3.28		373	3.76
	289	2.80		332	3.29		374	3.77
	290	2.82		333	3.30		375	3.78
	291	2.83	8 year	...	...		376	3.79
	292	2.84		334	3.32		377	3.81
	293	2.85		335	3.33		378	3.82
	294	2.86		336	3.34		379	3.83
	295	2.87		337	3.35		380	3.84
	296	2.88		338	3.37		381	3.85
	297	2.89		339	3.38		382	3.86

TABLE V (*Continued*)

(7) HEALY PICTURE COMPLETION I

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	383	3.87		425	4.37		467	4.89
	384	3.89		426	4.38		468	4.90
	385	3.90		427	4.39		469	4.91
	386	3.91		428	4.41		470	4.93
	387	3.92		429	4.42		471	4.94
	388	3.93		430	4.43		472	4.95
	389	3.94		431	4.44		473	4.96
	390	3.95		432	4.46		474	4.98
	391	3.96		433	4.47		475	4.99
	392	3.98		434	4.48		476	5.00
	393	3.99		435	4.49		477	5.01
	394	4.00		436	4.51		478	5.03
	395	4.01		437	4.52		479	5.04
	396	4.02		438	4.53		480	5.05
	397	4.03		439	4.54		481	5.06
	398	4.04		440	4.55		482	5.08
	399	4.05		441	4.57		483	5.09
	400	4.07		442	4.58		484	5.10
	401	4.08		443	4.59		485	5.11
	402	4.09		444	4.60		486	5.13
	403	4.10		445	4.62		487	5.14
	404	4.11		446	4.63		488	5.15
	405	4.12		447	4.64		489	5.16
	406	4.13		448	4.65		490	5.17
	407	4.14		449	4.67		491	5.19
	408	4.16		450	4.68		492	5.20
	409	4.17		451	4.69		493	5.21
	410	4.18		452	4.70		494	5.22
	411	4.19		453	4.72		495	5.24
	412	4.20		454	4.73		496	5.25
9 year	...	...		455	4.74		497	5.26
	413	4.22		456	4.75		498	5.27
	414	4.23		457	4.77		499	5.29
	415	4.24		458	4.78		500	5.30
	416	4.26	10 year	...	...		501	5.31
	417	4.27		459	4.79		502	5.32
	418	4.28		460	4.80		503	5.34
	419	4.29		461	4.82		504	5.35
	420	4.31		462	4.83	11 year	...	...
	421	4.32		463	4.84		505	5.36
	422	4.33		464	4.85		506	5.38
	423	4.34		465	4.86		507	5.39
	424	4.36		466	4.88		508	5.41

TABLE V (*Continued*)

(7) HEALY PICTURE COMPLETION I

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	509	5.42		551	6.10		593	6.80
	510	5.44		552	6.12		594	6.82
	511	5.45		553	6.14		595	6.84
	512	5.47		554	6.15		596	6.85
	513	5.48		555	6.17		597	6.87
	514	5.50		556	6.19		598	6.89
	515	5.51		557	6.20		599	6.90
	516	5.53		558	6.22		600	6.92
	517	5.54		559	6.24		601	6.93
	518	5.56		560	6.25		602	6.95
	519	5.57	15 year	...	...		603	6.97
	520	5.59		561	6.27		604	6.98
	521	5.60		562	6.28		605	7.00
	522	5.62		563	6.30		606	7.02
12 year	...	...		564	6.32		607	7.03
	523	5.64		565	6.34		608	7.05
	524	5.66		566	6.35		609	7.07
	525	5.67		567	6.37		610	7.08
	526	5.69		568	6.39		611	7.10
	527	5.71		569	6.40		612	7.12
	528	5.72		570	6.42		613	7.13
	529	5.74		571	6.44		614	7.15
	530	5.76		572	6.45		615	7.17
	531	5.77		573	6.47		616	7.18
	532	5.79		574	6.49		617	7.20
	533	5.81		575	6.50		618	7.22
	534	5.82		576	6.52		619	7.23
	535	5.84		577	6.54		620	7.25
13 year	536	5.85		578	6.55		621	7.27
	537	5.87		579	6.57		622	7.28
	538	5.89		580	6.59		623	7.30
	539	5.91		581	6.60		624	7.32
	540	5.92		582	6.62		625	7.33
	541	5.94		583	6.64		626	7.35
	542	5.96		584	6.65		627	7.37
	543	5.97		585	6.67		628	7.38
	544	5.99		586	6.69		629	7.40
	545	6.01		587	6.70		630	7.42
	546	6.02		588	6.72		631	7.43
	547	6.04		589	6.74		632	7.45
14 year	548	6.06		590	6.75		633	7.47
	549	6.07		591	6.77		634	7.48
	550	6.09		592	6.79		635	7.50

TABLE V (*Continued*)

(7) HEALY PICTURE COMPLETION I

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	636	7.52		640	7.58		644	7.65
	637	7.53		641	7.60		645	7.67
	638	7.55		642	7.62		646	7.68
	639	7.57		643	7.63			

(8) PORTEUS MAZE TEST

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than								
5 yr. norm	4.0	−2.01		9.0	2.39	12 year	...	...
	4.5	−1.54	8 year	...	...		13.5	5.17
	5.0	−1.08		9.5	2.74	13 year	...	...
	5.5	−0.61		10.0	3.05		14.0	5.48
	6.0	−0.14		10.5	3.36	14 year	...	...
5 year	...	...	9 year	...	...		14.5	5.79
	6.5	+0.33		11.0	3.67		15.0	6.10
	7.0	0.80		11.5	3.98		15.5	6.42
6 year	...	...	10 year	...	...		16.0	6.73
	7.5	1.20		12.0	4.29		16.5	7.04
	8.0	1.59		12.5	4.57		17.0	7.35
7 year	...	...	11 year	...	...		17.5	7.67
	8.5	1.99		13.0	4.85		18.0	7.98

(9) KOHS BLOCK DESIGN TEST

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than								
5 yr. norm	0	−0.38		13	1.90		28	3.39
	1	−0.13		14	2.03		29	3.47
5 year	...	...		15	2.16		30	3.54
	2	+0.12		16	2.29		31	3.61
	3	0.37		17	2.42	9 year	...	...
	4	0.62		18	2.55		32	3.69
6 year	...	...		19	2.68		33	3.74
	5	0.86	8 year	...	...		34	3.80
	6	0.99		20	2.80		35	3.85
	7	1.12		21	2.87		36	3.90
	8	1.25		22	2.95		37	3.96
	9	1.38		23	3.02		38	4.01
	10	1.51		24	3.10		39	4.06
	11	1.64		25	3.17		40	4.12
	12	1.77		26	3.24		41	4.17
7 year	...	...		27	3.32		42	4.22

TABLE V (*Continued*)

(9) KOHS BLOCK DESIGN TEST

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	43	4.28		73	5.74		103	7.09
10 year	...	...	13 year	74	5.78		104	7.14
	44	4.33		75	5.83		105	7.18
	45	4.38		76	5.88		106	7.23
	46	4.44		..	...		107	7.27
	47	4.49		77	5.92		108	7.32
	48	4.54		78	5.97		109	7.36
	49	4.60		79	6.01		110	7.41
	50	4.65		80	6.06		111	7.45
	51	4.70		81	6.11		112	7.50
	52	4.76	14 year	82	6.15		113	7.54
	53	4.81		83	6.20		114	7.59
	54	4.86		84	6.24		115	7.63
11 year	...	...		..	...		116	7.67
	55	4.92		85	6.28		117	7.72
	56	4.97		86	6.33		118	7.76
	57	5.01		87	6.37		119	7.81
	58	5.06		88	6.42		120	7.85
	59	5.10	15 year	89	6.46		121	7.90
	60	5.15		90	6.51		122	7.94
	61	5.19		91	6.55		123	7.99
	62	5.24		..	...		124	8.03
	63	5.28		92	6.60		125	8.08
	64	5.33		93	6.64		126	8.12
	65	5.38		94	6.69		127	8.17
12 year	...	...		95	6.73		128	8.21
	66	5.42		96	6.78		129	8.26
	67	5.47		97	6.82		130	8.30
	68	5.51		98	6.87		131	8.35
	69	5.56		99	6.91		132	8.39
	70	5.60		100	6.96		133	8.44
	71	5.65		101	7.00			
	72	5.69		102	7.05			

Table VI

For Converting Total Point Scores into Years and Months of Mental Age, Form I

Years	Months											
	0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
5							X	0.64	1.28	1.93	2.57	3.21
6	3.85	4.49	5.13	5.78	6.42	7.06	7.70	8.32	8.94	9.56	10.18	10.80
7	11.42	12.04	12.66	13.28	13.90	14.52	15.14	15.70	16.26	16.82	17.38	17.94
8	18.50	19.06	19.62	20.18	20.74	21.30	21.86	22.36	22.87	23.37	23.88	24.38
9	24.89	25.39	25.89	26.40	26.90	27.41	27.91	28.30	28.70	29.09	29.48	29.88
10	30.27	30.66	31.06	31.45	31.84	32.24	32.63	32.93	33.24	33.54	33.84	34.15
11	34.45	34.75	35.06	35.36	35.66	35.97	36.27	36.50	36.74	36.97	37.20	37.44
12	37.67	37.90	38.14	38.37	38.60	38.84	39.07	39.26	39.46	39.65	39.84	40.04
13	40.23	40.42	40.62	40.81	41.00	41.20	41.39	41.57	41.75	41.93	42.11	42.29
14	42.46	42.64	42.82	43.00	43.18	43.36	43.54	43.69	43.84	43.98	44.13	44.28
15	44.43	44.57	44.72	44.87	45.02	45.16	45.31					

CHAPTER III

THE SCALE: FORM II

THE norms here presented for Form II of the Point Performance Scale are to be used only for those subjects who have already been tested with Form I.

The tests included in Form II are:

1. Knox Cube (series reversed).
2. Seguin Form Board (inverted).
3. Gwyn's Triangle Test.
4. Paterson's Five-Figure Form Board.
5. Glueck's Ship Picture Form Board.
6. Healy Picture Completion II.
7. Porteus Maze Test (number at left of subject).
8. Kohs Block Design Test (designs inverted).

These tests were selected upon the same basis as those of Form I: their ability to discriminate between successive chronological age levels. The discriminative values are to be found in Volume II. The Triangle Test serves the same purpose of shock absorber that the Two-Figure Test did for Form I.

MATERIALS

The materials needed are as follows:

1. Knox Cube: The five one-inch wooden cubes used in Test 1, Form I.

2. Seguin Form Board: Stoelting catalogue No. 27156. This is the same board that was used in Test 2, Form I. Insist upon a properly finished specimen, in which board and insets are smooth to touch. The board should have a dark stain; the insets, a light finish.

3. Gwyn's Triangle Test: Stoelting catalogue No. 27172. Be sure that these supposedly interchangeable parts can be readily interchanged.

4. Paterson's Five-Figure Form Board: Stoelting catalogue No. 27166. See that there is enough play between pieces so that they will slip readily into place.

5. Glueck's Ship Picture Form Board: Stoelting catalogue No. 27185. The one now sold under this number is much smaller than the one used in the Pintner and Paterson standardization. The outside measurements of the frame of the present picture are approximately 9 7/8 by 6 3/8 inches. Build the picture correctly in the frame. Turn the frame face down on the table. Remove the frame and number the pieces:

Top row 8, 9, 2, 7, 5
Bottom row 4, 1, 10, 6, 3

6. Healy Picture Completion II. Be sure that the edges of the insets are kept pasted down firmly, as children are quick to see and to select blocks showing signs of much use.

7. Porteus Maze Test: Porteus Mazes for five years to fourteen years inclusive.

8. Kohs Block Design Test: Stoelting, no catalogue number. On the back of Design II paste a blue one-inch square. On the back of Design I, paste a one-inch square, the upper half of which is yellow, and the lower half, blue. If the same set of design cards is used for both Forms I and II, as it would be in most clinics, additional cards can be added to the set for these two trial forms.

As for Form I, we have recorded scores on six by eight inch filing cards, ruled.

A stop watch with time-out attachment is more useful than one without.

Two or three new, well-sharpened pencils.

PROCEDURE

The examiner should be seated opposite the patient. A low table is necessary for the younger children. The Knox cubes are placed on the table. The rest of the materials are placed on the floor beside the examiner in such a position as to be hidden from the subject, when he is seated, by the table. As for Form I, uniform pro-

cedure in arranging material eliminates waste movement on the part of the examiner.

We have used the following order: Seguin Form Board on the bottom, Five-Figure Form Board next, Healy II and Ship arranged to conceal the top of the Five-Figure Form Board, with the Triangle Test (in its box), mazes, and Kohs Block Design on top.

In clinic work, the preparation of the patient for the re-examination is done by the worker by whom the appointment is made. Children under twelve years of age are asked if they would like to come to the clinic again, to play more games. Patients over twelve years of age are asked if they would not like to return to the clinic to see if they could do as well again on the tests as they did the first time. Patients who did so poorly owing to emotional disturbance or poor coöperation that failure could not be disguised, are asked if they would not like to return to the clinic to see how much their work has improved, or, more often, to see if they can do as well this time on all the tests as they did on certain tests before. In meeting the patient in the waiting room, the examiner makes the same difference in his approach to the younger and older patients. After the initial contact is made, and it is time to take the patient to the examining room (from which all visitors are excluded), say to the child under twelve, "Let's go into this other room and see what games we can find to play today." To the patient over twelve say: "Let's go into this other room to work."

When seated at the table, point to the test material and say: "You remember, these all start easy, and they all get hard. When they are easy, don't get caught by thinking they are too easy and getting careless, and

when they get hard, remember that no one ever makes a perfect score."

The order in which the tests are presented appears to have a noticeable effect upon the norms. The present order should therefore be adhered to.

(1) *Knox Cube Test.* Place four of the cubes two inches apart in a horizontal row in front of the patient. Say, "Watch." Tap blocks 1, 2, 3, 4 in the order named with the fifth cube, at the rate of about one tap per second. Begin at the right of the patient.

Patient

1 2 3 4

Examiner

Put down the fifth cube between 2 and 3, but nearer the patient, and say, "You make it touch the same ones that I made it touch."

Present the series in the following order:

A 1234	E 1423	I 14324
B 12343	F 1324	J 142341
C 12342	G 13124	K 132413
D 1432	H 13243	L 143124

For patients who tend to begin at the opposite end of the row, praise for correct sequence and give full credit, but continue to demonstrate with series A until it is exactly reproduced. Place the fifth block always in the same position before the patient at the end of each series. Older patients often think that the position of this block is part of the test, unless it is kept constant. At the first failure, again caution against careless error. Continue the test through three successive failures.

Repeat in full as the last test of the scale. Say: "Let's see if you can do the one with these blocks, again, as well as you did the first time." Record successes letter by letter, leaving a space for each failure. The score is the average of the two trials.

For this form of the scale, be sure to begin each series at the right of the patient instead of at the left as in Form I.

(2) *Seguin Form Board.* For Form II place the board with the star toward the examiner for all three trials, instead of toward the patient as in Form I. Stack blocks with the patient watching, in the following order: at the upper-right corner of the board, from the position of the subject, place the ▭ ; on that the ⬭ , next the ⬭ , and the ◠ on top. In the middle pile place the □ on the bottom, the ✚ next, and then the △. At the upper-left corner of the board, place the ☆ at the bottom, then the ○ , and the ◥ on top. Say: "This is easy. The game is to see how fast you can do it. When I say 'Go,' put these back as fast as you can. Ready. Go."

For the second trial say: "That was good. Do you want to try it again? See how much faster you can do it this time. Ready. Go."

For the third trial say: "Good! It was — seconds faster this time. Try it again. Perhaps you can do it still faster. Ready. Go." Blocks should be stacked by the examiner rapidly but without any suggestion of nervous haste. Say nothing during the progress of a trial unless, as in the case of some young children, the patient stops work altogether and has to be encouraged to continue. Watch alert patients to make sure that they do not start before the signal is given. Record time for each trial. The shortest of the three trials is used as the score.

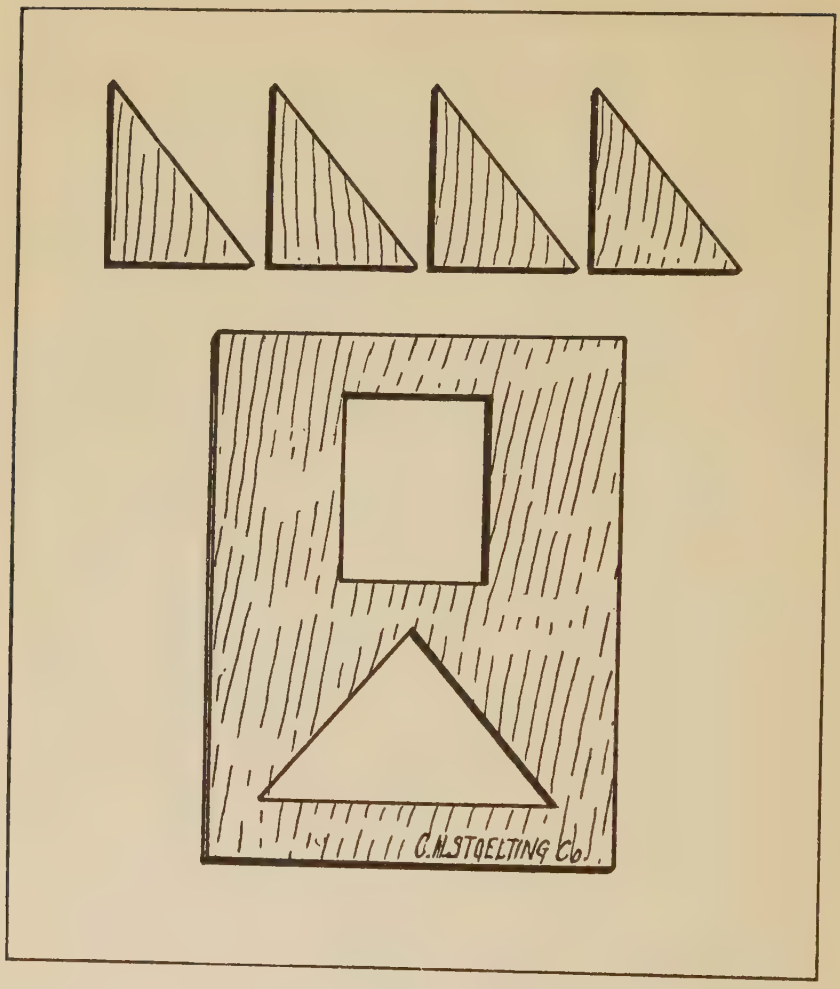

FIGURE 7. TRIANGLE TEST

(3) *Triangle Test.*[1] Say: "Turn and look at that picture (behind patient) so that you cannot see while I fix the next game." Arrange the pieces as shown in Figure 7. Have the patient again face the table. Say:

[1] Pintner and Paterson, *A Scale of Performance Tests* (New York: D. Appleton and Company, 1923), p. 41.

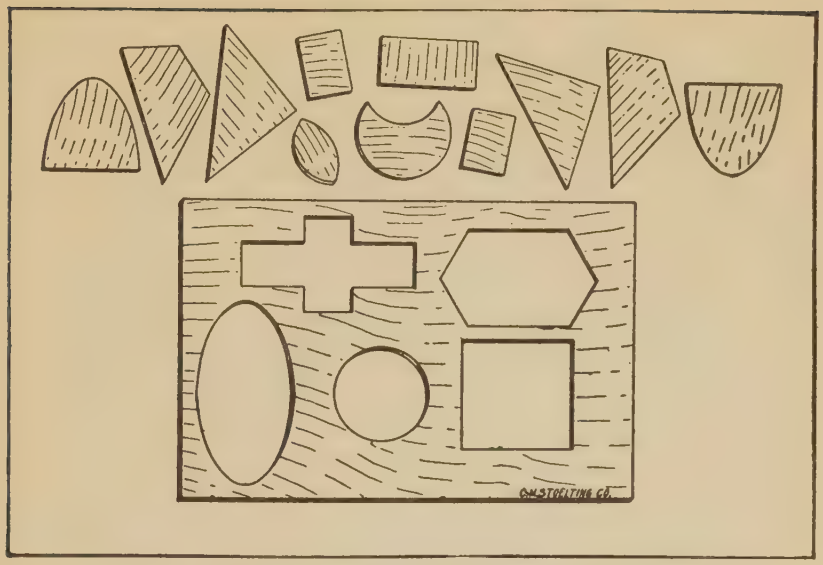

FIGURE 8. FIVE-FIGURE FORM BOARD

"Put these back as fast as you can. Ready. Go." Allow not more than three minutes. If the test is completed, record time. If it is not, record partial success as "triangle O. K." or "rectangle O. K." Note reactions and methods of work for clues as to kind of handling required to keep the patient working at optimal efficiency. This test is given as a shock absorber. The score is not included in the final rating, but the test cannot be omitted without danger of changing the score on subsequent tests.

(4) *Five-Figure Form Board.*[2] Say: "Now turn your head again so that you cannot see while I fix the next game." Place the board so that the side with three figures is nearest the patient. Arrange the pieces as shown in Figure 8. Have the subject again face the table. Say: "Put these back as fast as you can. Ready. Go." Allow five minutes. Record time if the test is completed.

[2] Pintner and Paterson, op. cit., p. 35.

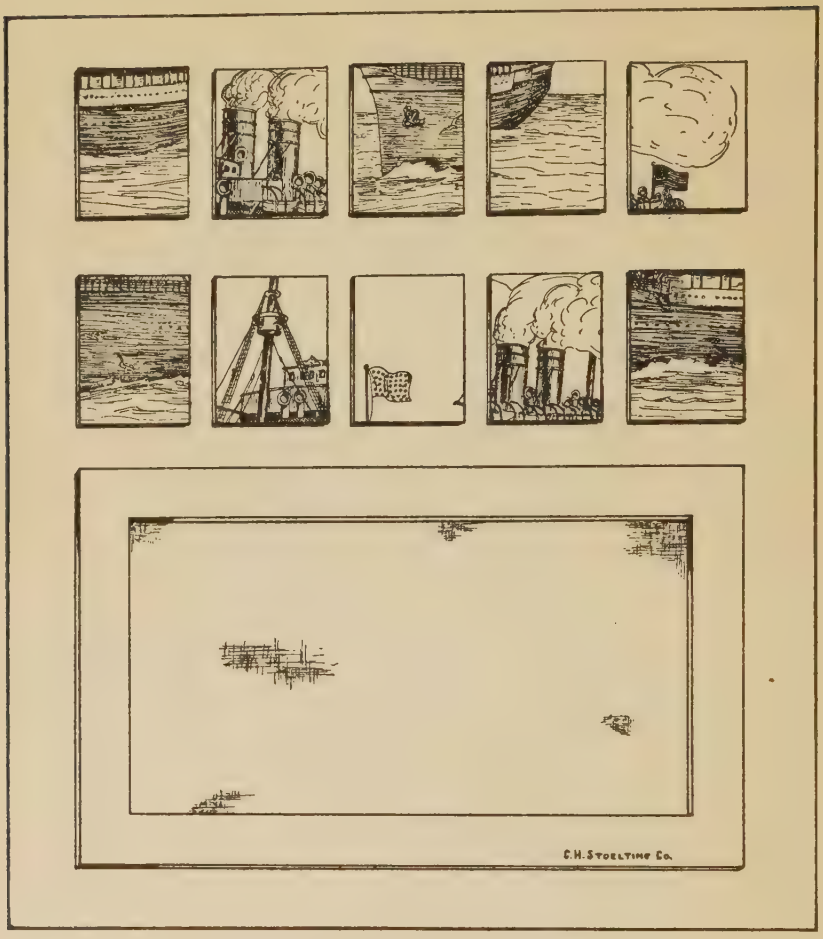

FIGURE 9. SHIP PICTURE FORM BOARD

If it is not, record the number of forms completed at the end of five minutes.

(5) *Ship Picture Form Board.*[3] Have the pieces arranged in the frame in the following order:

1, 2, 3, 4, 5
6, 7, 8, 9, 10

[3] Pintner and Paterson, op. cit., p. 60.

Turn the frame face down on the table with the top edge of the frame nearest to the examiner. Remove the frame. Turn pieces face up without changing their position in relation to each other. Say: "Here is a picture that has been taken apart. When it is put together, what do you think it is a picture of?" If the patient does not know, point to some piece and say, "What does this look like?" until he guesses what it is. If he fails to recognize it as a ship after a reasonable time, tell him what it is. Then say: "Put them together in here so that the picture looks just right. Make the best ship you can." Allow five minutes. If he finishes in less than five minutes, say, "Look it over carefully to see that it is just right." Turn the frame so that the bottom of the picture is nearest the examiner. Turn the frame face down on the table. Remove the frame, and record the order of the pieces by means of the numbers. Compare with the correct order for the numbers:

8, 9, 2, 7, 5
4, 1, 10, 6, 3

and score one for each correct contact with the edge of the frame or with another piece. This yields a total score of 27: 10 points for correct contact with horizontal edges of the frame, 4 for correct contact with vertical edges of the frame, 8 for correct juxtaposition of pieces horizontally, and 5 for correct juxtaposition of pieces vertically.

(6) *Healy Picture Completion II*[4]. Have the pieces arranged in the box in the places indicated by the numbers. Place the two pictures before the patient, with the sample picture of the boy reaching for his shoe, at the left of the patient. Say: "This picture starts here, where this boy is getting dressed. It is the picture of

[4] Healy, William L., "Pictorial Completion Test II," *Journal of Applied Psychology*, V (September, 1921), 232, 233.

TABLE VII

Healy Picture Completion II

RAW SCORE VALUES OF PIECES AS PLACED IN PICTURES I TO X

Pieces	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*
1	..	..	....	..	2	.	..	..	..	12.5
2	0	0	1	2	..	0	0	0	0	0
3	..	..	..	..	..	..	1	15.5	..	..
4	..	..	..	..	0	..	..	..	..	6
5	..	..	..	..	..	..	0	0	0	..
6	0	..	..	0	..	..	..	..	..	..
7	0	0	1	2	..	0	0	0	0	0
8	6	..	..	2	..	..	..	..	..	..
9	..	5	0	..	0	..	..	..	..	0
10	0	..	..	1	..	..	..	..	..	..
11	1	..	..	8	..	..	..	..	..	..
12	..	0	..	..	0	..	..	..	..	1
13	..	5	0	..	3	..	..	..	..	1
14	..	..	..	..	..	..	1	6	..	..
15	..	..	1	..	..	1	0	0	0	..
16	..	..	..	..	..	..	0	0	0	..
17	..	..	..	..	..	..	1	6	..	..
18	..	..	0	..	..	9.5	..	0	..	..
19	..	2	..	..	0	..	..	..	..	0
20	..	..	..	..	..	..	..	..	..	..
21	..	0	..	..	1	..	..	..	..	0
22	..	..	..	..	2	..	..	..	..	6
23	1	..	..	18	..	..	..	..	..	..
24	..	..	..	..	0	..	..	..	..	6
25	..	..	..	..	..	..	2	0	0	..
26	..	..	0	..	..	4	0	0	0	..
27	..	5	0	..	1	..	..	..	..	0
28	..	..	0	..	..	4	0	0	0	..
29	..	..	..	..	..	..	..	..	..	0
30	2	..	..	2	..	..	..	..	..	..
31	1	..	..	8	..	..	..	..	..	..
32	..	0	.	..	7	..	..	..	..	0
33	..	..	..	..	..	..	1	7	..	..
34	..	..	..	..	..	.	5.5	0	0	..
35	..	..	11	..	0	0	..	..	..	0
36	..	..	1	..	..	2	0	0	0	..
37	..	0	4	..	0	0	..	..	..	0
38	..	..	..	..	..	..	..	..	..	0
39	..	..	..	..	..	..	0	0	1	..
40	..	..	..	..	..	..	..	..	..	1

TABLE VII (*Continued*)

Pieces	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*
41 . .	..	0	..	..	2	..	..	..	..	0
42 . .	0	..	..	2	..	..	..	..	..	..
43 . .	..	0	..	..	2	..	..	..	..	0
44 . .	..	..	1	..	..	1	0	0	0	..
45 . .	3	..	..	2	..	..	..	..	..	..
46 . .	0	0	6	0	0	0	..	..	..	0
47 . .	..	5	0	..	1	..	..	..	..	2
48 . .	..	..	..	..	..	..	0	0	5	..
49 . .	..	10	0	..	1	..	..	..	..	2
50 . .	0	..	..	..	..	..	0	0	1	..
51 . .	0	0	1	2	..	0	0	0	0	0
52 . .	1	..	..	8	..	..	..	..	..	..
53 . .	0	0	1	2	..	0	0	0	0	0
54 . .	..	..	..	..	..	..	0	0	0	..
55 . .	..	..	6	..	0	0	..	..	..	0
56 . .	..	..	..	..	..	..	2	0	0	..
57 . .	..	..	..	..	..	..	0	0	1	..
58 . .	0	0	1	2	..	0	0	0	0	0
59 . .	..	..	..	..	..	..	0	0	2	..
60 . .	..	0	2	..	0	0	..	..	..	0

the same boy doing one thing after another during the same day." Run finger over pictures to indicate order of sequence. "In each picture a piece is missing. Any of these pieces will go into any of these spaces. You choose the piece for each space that will make the best picture. What is this boy reaching for? That's right. You find the shoe and put it here." If the patient does not say "shoe," point to the picture and say, "Look. What does he need?" Continue this until the child answers correctly. Occasionally, it is necessary to furnish the answer, but most patients are able to give it, with the help suggested. Say: "That is right. You find the shoe and put it here. You can't use this shoe (pointing to low shoe) because it is a low shoe and you want a high one to match this one." If the patient picks out the low shoe in spite of this, say: "No, you can't

use that one, as you need a high shoe to match the one he has on (point). Now fill in the other spaces in the same way. Find the piece for each space that makes the best picture." If the child is inclined to hurry, say, "You do not need to hurry, but be sure to get it right." If he wants to remove a piece in order to substitute another, show him how to push it up from beneath, so that he can lift it out more easily. This not only saves the time of the patient, but saves much wear and tear on the blocks. Score according to the raw score values given in Table VII.

(7) *Porteus Maze Test.*[5] Begin with the five year maze for all patients. Place it with the number at the left of the patient. This rotates the maze 90 degrees from the position in which it was presented in Form I. Hold it in position with the tips of the fingers. Hand the patient a pencil. Say: "Suppose you were driving down this road in your automobile. You could get out here, as this is an open road. (Point to the opening at the end of the fourth road, and indicate without touching the paper the motion of passing out through the open space.) And you could get out here, as this road is open. (Point to opening at the end of the sixth road, and again indicate motion of passing out through the open space.) But there is a fence here. This road is closed. (Point to the seventh road and the line across the end of it.) You couldn't get out here. And this road is closed, and this road is closed, and this road is closed, and this road is closed. (Point to lines blocking exits to fifth, third, second, and first roads in order.) Now, you take your pencil and show me how you would go down this road

[5] Porteus, S. D., *Guide to Porteus Maze Test* (Training School, Vineland, N. J., 1924), pp. 20–29.

(begin at S and make a line not more than one-eighth of an inch long) and drive out the first open road you come to." If the patient fails by going into a blocked road, or by going out the sixth road, a second trial on a new blank is allowed, and the instructions are repeated verbatim.

There are six possibilities which determine the credit for this test:

1. The patient goes out the first open road (fourth road) on the first trial. Full credit, one year.
2. The patient goes out the second open road (sixth road) the first trial, and on the second trial goes out the correct opening. Full credit, one year.
3. The patient goes out the second open road both trials. Half credit, one-half year.
4. The patient goes into a blocked road the first trial and goes out the correct opening the second trial. Half credit, one-half year.
5. The patient goes into a blocked road the first trial, and goes out the second opening the second trial. No credit. (The general instructions state that testing proceeds until there have been two successive failures, but in this case, while no credit is allowed, the test is not counted as a failure in the above sense.)
6. The patient goes into a blocked road both trials. Failure.

Allow two trials. Record on score card as 5, if full credit was earned, or as 5 /2 if half credit was earned. In case of total failure, record with a dash followed by a comma to separate it from the score for the six year maze. Place used mazes directly in the waste basket, or lay them aside, face down.

Place the six year maze before the patient with the number at his left. Say: "Start here (indicating S) and drive out here (point to arrow at the other end) without getting into any closed roads, and without driving over any fences. You may stop to think any time you like, so long as you keep your pencil still." Allow two trials.

If the child immediately cuts across a line, he should be stopped and the injunction against crossing lines emphasized. The instructions are repeated verbatim, and a second trial is given. Record as 6, 6 /2, or —, according to the credit earned: one year for success on the first trial, one-half year for success on the second trial, or no credit for failure on both trials. Place the seven year maze before the child with the number at his left and say: "Now start here (pointing to S) and drive out here (pointing to arrow) without going into any closed roads, and without driving over any fences." Allow two trials. Record as 7, 7 /2, or —, according to the credit earned. Place the eight year maze before the patient, with the number at his left. Say: "Start here and find your way out the open road." Indicate S for the start, but do not point to the exit. If the child asks, "Where is the open road?" say, "You will have to find it for yourself." If he asks, "Is this the open road?" pointing to the exit, say, "Yes. You could find it for yourself, couldn't you!" Allow two trials. Score as for mazes six and seven.

Repeat the eight year maze procedure with the nine, ten, and eleven year mazes. For Form II, all mazes are placed with the number turned toward the left, instead of toward the patient as in Form I. For the nine year maze give equal credit if either the longer or shorter route out is taken.

Repeat this same procedure for the twelve and fourteen year mazes, but allow *four trials for each.*

Continue testing through two successive failures.

Assume a basal age of four years. Add one year for every full credit earned, and one-half year for every half credit earned on tests five to eleven inclusive.

If both the twelve and fourteen year mazes are passed,

add together the number of trials taken for both mazes and give additional credits as follows:

Sum of trials in 12 and 14 mazes	*Credit to be added to score already obtained on mazes 5 to 11, incl.*
2 trials	5 years
3 trials	4 years
4 trials	3 years
5 trials	2½ years
6 trials	2 years
7 trials	1½ years
8 trials	1 year

If the twelve year maze is passed, and the fourteen year maze is failed, credit one year if the twelve year is passed on trial 1, 2, or 3. Credit one-half year if the twelve year maze is passed on the fourth trial.

If the fourteen year maze is passed after the twelve year maze has been failed, credit is given as follows:

14 year maze	*Credit to be added to score already obtained*
1 trial	2 years
2 trials	1½ years
3 trials	1 year
4 trials	½ year

The following precautions should be observed:

(a) Do not allow the child to correct his own error by retracing his course. He should be stopped as soon as an error is made, and given a new test sheet. Say: "You cannot get out that way. Begin again, here." An error consists in crossing an imaginary line across the opening to a blocked passage. Bringing the child back to the starting point after an error, is intended to impress him with the seriousness of making a mistake. However, no explicit warning as to the need for care should be given. This procedure serves also to

safeguard against accidental success up to the point where the previous error occurred.

(b) Never allow a child more trials than the instructions provide for, even though you do not intend to allow credit for success on the additional trial, as the extra practice may give him an undue advantage on the mazes to be presented later.

(c) Never allow the child the preliminary practice of tracing the course of the maze in the air with pencil or finger. If the child persists in doing this, he is told to keep his hands off the table until he is ready to begin to draw.

(d) It is inadvisable to use the same test blank for more than one trial.

(e) Never allow an error to go unpenalized, no matter how slight or how quickly corrected it may be, unless it is very obviously a slip of the pencil due to poor motor control. In tracing the correct course around the maze, the child may inadvertently run across a line that is not intended as a hazard. This is not penalized. The child is merely warned to "stay in the road."

(f) The child should also be warned against lifting the pencil from the paper after a trial is begun. No penalty is attached to this, but the warning is repeated as often as is necessary.

(g) For foreign or for deaf children, it is necessary to use the five and sometimes the six year maze as demonstration forms.

(8) *Kohs Block Design Test.* Take four of the cubes and place them before the patient. Say: "You remember, these are red on one side (point), yellow on another (point), white on another (point), and blue on another (point). On this side they are red and white, and on this side they are yellow and blue. All the blocks are just alike: each block is just like every other block."

Place Trial Card 1 before the patient, leaving room between the card and the edge of the table for him to build the design with the blocks. Say: "You take your four blocks and make a big blue square like this one." Give whatever help is necessary either verbally or by putting the blocks into place. Break up the design built

of blocks and say, "Now make one just like this," and present Trial Card 2. Again give whatever help is necessary. Insist upon the design being in correct position. Present Design I. For Form II, place all designs before the patient with the design number in the lower-right corner of the card from the position of the patient. This inverts the design as presented in Form I. Say: "Now make this one. This (pointing to the red) is supposed to be red, and this (pointing to the blue) is supposed to be blue." This procedure is necessary to keep bright young subjects from trying to find colors on the blocks to match those of the design. Give whatever help is necessary for completion of the design, *after the time limit has elapsed.* Of course, in such case, no credit is given. Proceed in similar fashion with Design II. Name the colors of the design. Help, if the design is not completed within the time limit. This extended practice is intended to offset in some measure the advantage possessed by those children who have had these sets of blocks as toys. Record time. Score, penalizing for excess time, according to the raw score values given in Table III. Do not count moves, or deduct for excess moves.

Present designs in the following order: I, II, III, IV, V, VI, VIII, VII, IX, XI, X, XII, XIV, XIII, XV, XVI, XVII.

When the designs are presented in this order, we find that the test need be continued through only three successive failures instead of through the five recommended by the Kohs manual. A further saving of time can be effected by having the subject break up the design made of blocks that he has just completed while the examiner is reaching for the next design to be presented.

Change the raw scores obtained on the separate tests

into point scores by reading from Table IX. Add the point scores for the separate tests to obtain a total point score. Change the total point score into years and months of mental age by reading from Table X, and calculate IQ's in the usual manner.

Table VIII

Combined Point Scale, Form II (Retest)

	Knox		*Seguin*		*5 Figure*		*Ship*		*Healy II*		*Maze*		*Kohs*		
C.A.	*Av.*	*Pts.*	*Av.*	*Pts.*	*Av.*	*Pts.*	*Av.*	*Pts.*	*Av.*	*Pts.*	*Av.*	*Pts.*	*Av.*	*Pts.*	*Total*
6	5.20	X	23 9	X	135.5	X	11.84	X	22.0	X	8.08	X	7.0	X	X
7	6.15	1.06	20.8	1.22	85.5	1.05	16.00	.98	30.7	.93	9.30	1.07	12.9	.71	7.02
8	6.64	1.63	18.5	2.30	71.0	1.49	19.16	1.85	38.0	1.71	10.45	2.15	22.5	1.63	12.76
9	7.08	2.14	16.7	3.33	61.0	1.85	20.7	2.36	44.3	2.38	11.40	3.02	37.0	2.57	17.65
10	7.40	2.48	15.5	4.13	54.5	2.38	22.12	2.83	50.1	3.01	12.18	3.65	51.1	3.40	21.88
11	7.70	2.82	14.3	4.97	49.0	2.84	23.2	3.20	55.1	3.54	12.73	4.08	66.0	4.18	25.63
12	8.00	3.14	13.6	5.48	44.1	3.22	24.48	3.63	59.0	3.96	13.30	4.52	78.5	4.80	28.75
13	8.20	3.36	13.0	5.92	40.0	3.54	25.1	3.88	61.1	4.18	13.76	4.91	89.4	5.28	31.07
14	8.30	3.47	12.6	6.30	36.5	3.93	25.3	3.96	62.7	4.35	14.00	5.15	100.0	5.79	32.95
15	8.40	3.57	12.3	6.59	34.2	4.25	25.4	4.00	63.9	4.48	14.22	5.41	108.0	6.20	34.50
16	8.49	3.68	12.0	6.89	32.0	4.57	25.4	4.00	65.2	4.62	14.32	5.53	117.1	6.77	36.06

TABLE IX

For Determining the Point Value of Any Score, Form II (Retest)

(1) KNOX CUBE: RETEST

C.A.	Score	Points	C.A.	Score	Points	C.A.	Score	Points
Less than 6 yr. norm	.0	−5.74		5.0	− .21	11 year	.....	.....
	.5	−5.19	6 year	.....	.....	12 year	8.0	3.14
	1.0	−4.63		5.5	+ .34	16 year	8.5	3.68
	1.5	−4.08		6.0	.90		9.0	4.21
	2.0	−3.53	7 year	.....	.....		9.5	4.74
	2.5	−2.98		6.5	1.46		10.0	5.27
	3.0	−2.42	8 year	.....	.....		10.5	5.80
	3.5	−1.87		7.0	2.05		11.0	6.33
	4.0	−1.32	9 year	.....	.....		11.5	6.86
	4.5	− .76		7.5	2.60		12.0	7.39

(2) SEGUIN FORM BOARD: RETEST

C.A.	Score	Points	C.A.	Score	Points	C.A.	Score	Points
Less than 6 yr. norm	50*	−10.14		33	− 3.52	8 year	..	.....
	49	− 9.75		32	− 3.14		18	2.58
	48	− 9.36		31	− 2.75		17	3.15
	47	− 8.97		30	− 2.36	9 year	..	.....
	46	− 8.58		29	− 1.97		16	3.79
	45	− 8.19		28	− 1.58	10 year	..	.....
	44	− 7.80		27	− 1.19		15	4.48
	43	− 7.41		26	− .80	11 year	..	.....
	42	− 7.03		25	− .41		14	5.19
	41	− 6.64		24	− .02	12 year	..	.....
	40	− 6.25	6 year	..	.....	13 year	13	5.92
	39	− 5.86		23	+ .37	16 year	12	6.89
	38	− 5.47		22	.76		11	7.87
	37	− 5.08		21	1.15		10	8.86
	36	− 4.69	7 year	..	.....		9	9.85
	35	− 4.30		20	1.54		8†	10.84
	34	− 3.91		19	2.01			

*Deduct 0.389 for each second above 50.

†Add 0.9879 for each second below 8.

TABLE IX (*Continued*)

(4) FIVE-FIGURE FORM BOARD: RETEST

	Score	*Points*	*Score*	*Points*	*Score*	*Points*
Less than 6 yr. norm	D.N.C.	−3.89	258	−2.56	215	−1.66
	300	−3.44	257	−2.54	214	−1.64
	299	−3.42	256	−2.52	213	−1.62
	298	−3.40	255	−2.50	212	−1.60
	297	−3.38	254	−2.48	211	−1.58
	296	−3.35	253	−2.46	210	−1.56
	295	−3.33	252	−2.43	209	−1.54
	294	−3.31	251	−2.41	208	−1.52
	293	−3.29	250	−2.39	207	−1.49
	292	−3.27	249	−2.37	206	−1.47
	291	−3.25	248	−2.35	205	−1.45
	290	−3.23	247	−2.33	204	−1.43
	289	−3.21	246	−2.31	203	−1.41
	288	−3.19	245	−2.29	202	−1.39
	287	−3.17	244	−2.27	201	−1.37
	286	−3.15	243	−2.25	200	−1.35
	285	−3.12	242	−2.23	199	−1.33
	284	−3.10	241	−2.20	198	−1.31
	283	−3.08	240	−2.18	197	−1.29
	282	−3.06	239	−2.16	196	−1.26
	281	−3.04	238	−2.14	195	−1.24
	280	−3.02	237	−2.12	194	−1.22
	279	−3.00	236	−2.10	193	−1.20
	278	−2.98	235	−2.08	192	−1.18
	277	−2.96	234	−2.06	191	−1.16
	276	−2.94	233	−2.04	190	−1.14
	275	−2.92	232	−2.02	189	−1.12
	274	−2.89	231	−2.00	188	−1.10
	273	−2.87	230	−1.98	187	−1.08
	272	−2.85	229	−1.95	186	−1.06
	271	−2.83	228	−1.93	185	−1.03
	270	−2.81	227	−1.91	184	−1.01
	269	−2.79	226	−1.89	183	− .99
	268	−2.77	225	−1.87	182	− .97
	267	−2.75	224	−1.85	181	− .95
	266	−2.73	223	−1.83	180	− .93
	265	−2.71	222	−1.81	179	− .91
	264	−2.69	221	−1.79	178	− .89
	263	−2.66	220	−1.77	177	− .87
	262	−2.64	219	−1.75	176	− .85
	261	−2.62	218	−1.72	175	− .83
	260	−2.60	217	−1.70	174	− .80
	259	−2.58	216	−1.68	173	− .78

TABLE IX (*Continued*)

(4) FIVE-FIGURE FORM BOARD: RETEST

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than								
6 yr. norm	172	− .76		130	.11		87	.01
	171	− .74		129	.14		86	1.03
	170	− .72		128	.16	7 year	..	...
	169	− .70		127	.18		85	1.06
	168	− .68		126	.20		84	1.08
	167	− .66		125	.22		83	1.10
	166	− .64		124	.24		82	1.12
	165	− .62		123	.26		81	1.14
	164	− .60		122	.28		80	1.16
	163	− .57		121	.30		79	1.20
	162	− .55		120	.32		78	1.24
	161	− .53		119	.34		77	1.27
	160	− .51		118	.37		76	1.31
	159	− .49		117	.39		75	1.35
	158	− .47		116	.41		74	1.38
	157	− .45		115	.43		73	1.42
	156	− .43		114	.45		72	1.45
	155	− .41		113	.47	8 year	71	1.49
	154	− .39		112	.49		70	1.53
	153	− .37		111	.51		69	1.56
	152	− .34		110	.53		68	1.60
	151	− .32		109	.55		67	1.64
	150	− .30		108	.57		66	1.67
	149	− .28		107	.60		65	1.71
	148	− .26		106	.62		64	1.74
	147	− .24		105	.64		63	1.78
	146	− .22		104	.66		62	1.82
	145	− .20		103	.68	9 year	61	1.85
	144	− .18		102	.70		60	1.89
	143	− .16		101	.72		59	1.98
	142	− .14		100	.74		58	2.07
	141	− .11		99	.76		57	2.15
	140	− .09		98	.78		56	2.24
	139	− .07		97	.80		55	2.33
	138	− .05		96	.83	10 year	..	...
	137	− .03		95	.85		54	2.42
	136	− .01		94	.87		53	2.50
6 year	...	..		93	.89		52	2.59
	135	+ .01		92	.91		51	2.68
	134	.03		91	.93		50	2.76
	133	.05		90	.95	11 year	49	2.84
	132	.07		89	.97		48	2.91
	131	.09		88	.99		47	2.99

TABLE IX (*Continued*)

(4) FIVE-FIGURE FORM BOARD: RETEST

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	46	3.07		36	3.98		25	5.60
	45	3.15		35	4.13		24	5.75
12 year	..	...	15 year	..	...		23	5.90
	44	3.23		34	4.28		22	6.05
	43	3.31		33	4.42		21	6.19
	42	3.38	16 year	32	4.57		20	6.34
	41	3.46		31	4.72		19	6.49
13 year	40	3.54		30	4.87		18	6.64
	39	3.65		29	5.01		17	6.78
	38	3.76		28	5.16		16	6.93
	37	3.87		27	5.31		15	7.08
14 year	..	...		26	5.46			

(5) SHIP PICTURE FORM BOARD

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	0	−2.78	6 year	..	X		21	2.46
	1	−2.54		12	+ .04		22	2.79
	2	−2.31		13	.27	10 year	..	.....
	3	−2.07		14	.51		23	3.13
	4	−1.84		15	.74	11 year	..	.....
	5	−1.61	7 year	16	.98		24	3.47
	6	−1.37		17	1.22	12 year	..	.....
	7	−1.14		18	1.51		25	3.84
	8	− .90		19	1.81	13 year	..	.....
	9	− .67	8 year	..	.....		26	4.29
	10	− .43		20	2.13		27	4.79
	11	− .20	9 year	..	.....			

TABLE IX (*Continued*)

(6) HEALY PICTURE COMPLETION TEST II

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than								
6 yr. norm	.0	−2.35		21.5	− .06		42.5	2.19
	.5	−2.30	6 year	22.0	X		43.0	2.25
	1.0	−2.25		22.5	+ .05		43.5	2.30
	1.5	−2.20		23.0	.11		44.0	2.35
	2.0	−2.14		23.5	.16	9 year	...	....
	2.5	−2.09		24.0	.21		44.5	2.40
	3.0	−2.03		24.5	.26		45.0	2.46
	3.5	−1.98		25.0	.32		45.5	2.51
	4.0	−1.93		25.5	.37		46.0	2.57
	4.5	−1.88		26.0	.43		46.5	2.62
	5.0	−1.82		26.5	.48		47.0	2.67
	5.5	−1.77		27.0	.53		47.5	2.72
	6.0	−1.71		27.5	.58		48.0	2.78
	6.5	−1.66		28.0	.64		48.5	2.83
	7.0	−1.60		28.5	.69		49.0	2.89
	7.5	−1.55		29.0	.75		49.5	2.94
	8.0	−1.50		29.5	.80		50.0	3.00
	8.5	−1.45		30.0	.86	10 year	...	....
	9.0	−1.39		30.5	.91		50.5	3.05
	9.5	−1.34	7 year	...	...		51.0	3.10
	10.0	−1.28		31.0	.96		51.5	3.15
	10.5	−1.23		31.5	1.01		52.0	3.21
	11.0	−1.18		32.0	1.07		52.5	3.26
	11.5	−1.13		32.5	1.12		53.0	3.32
	12.0	−1.07		33.0	1.18		53.5	3.37
	12.5	−1.02		33.5	1.23		54.0	3.42
	13.0	− .96		34.0	1.28		54.5	3.47
	13.5	− .91		34.5	1.33		55.0	3.53
	14.0	− .86		35.0	1.39	11 year	...	....
	14.5	− .81		35.5	1.44		55.5	3.58
	15.0	− .75		36.0	1.50		56.0	3.64
	15.5	− .70		36.5	1.55		56.5	3.69
	16.0	− .64		37.0	1.60		57.0	3.74
	16.5	− .59		37.5	1.65		57.5	3.79
	17.0	− .53	8 year	38.0	1.71		58.0	3.85
	17.5	− .48		38.5	1.76		58.5	3.89
	18.0	− .43		39.0	1.82	12 year	59.0	3.96
	18.5	− .38		39.5	1.87		59.5	4.01
	19.0	− .32		40.0	1.93		60.0	4.07
	19.5	− .27		40.5	1.98		60.5	4.12
	20.0	− .21		41.0	2.03		61.0	4.17
	20.5	− .16		41.5	2.08	13 year	...	....
	21.0	− .11		42.0	2.14		61.5	4.23

TABLE IX (*Continued*)

(6) HEALY PICTURE COMPLETION TEST II

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
	62.0	4.28		74.0	5.56		87.5	7.00
	62.5	4.33		74.5	5.61		88.0	7.06
14 year	...	.....		75.0	5.67		88.5	7.11
	63.0	4.39		75.5	5.72		89.0	7.17
	63.5	4.44		76.0	5.78		89.5	7.22
15 year	...	.....		76.5	5.83		90.0	7.27
	64.0	4.49		77.0	5.88		90.5	7.32
	64.5	4.54		77.5	5.93		91.0	7.38
	65.0	4.60		78.0	5.99		91.5	7.43
16 year	...	.....		78.5	6.04		92.0	7.49
	65.5	4.65		79.0	6.10		92.5	7.54
	66.0	4.71		79.5	6.15		93.0	7.60
	66.5	4.76		80.0	6.20		93.5	7.65
	67.0	4.81		80.5	6.25		94.0	7.70
	67.5	4.86		81.0	6.31		94.5	7.75
	68.0	4.92		81.5	6.36		95.0	7.81
	68.5	4.97		82.0	6.42		95.5	7.86
	69.0	5.03		82.5	6.47		96.0	7.92
	69.5	5.08		83.0	6.53		96.5	7.97
	70.0	5.14		83.5	6.58		97.0	8.02
	70.5	5.19		84.0	6.63		97.5	8.07
	71.0	5.24		84.5	6.68		98.0	8.13
	71.5	5.29		85.0	6.74		98.5	8.18
	72.0	5.35		85.5	6.79		99.0	8.24
	72.5	5.40		86.0	6.85		99.5	8.29
	73.0	5.46		86.5	6.90		100.0	8.34
	73.5	5.51		87.0	6.95			

(7) PORTEUS MAZE: RETEST

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than								
6 yr. norm	4.5	−3.13	7 year	...	...	11 year	...	...
	5.0	−2.69		9.5	1.26		13.0	4.29
	5.5	−2.25		10.0	1.73	12 year	...	...
	6.0	−1.82	8 year	...	...		13.5	4.69
	6.5	−1.38		10.5	2.20	13 year	...	...
	7.0	− .94		11.0	2.66	14 year	14.0	5.15
	7.5	− .51	9 year	...	...	15 year	...	...
	8.0	− .07		11.5	3.10		14.5	5.73
6 year	...	...		12.0	3.51		15.0	6.32
	8.5	+ .37	10 year	...	...		15.5	6.90
	9.0	.80		12.5	3.90		16.0	7.48

TABLE IX (*Continued*)

(8) KOHS BLOCK DESIGN: RETEST

C.A.	*Score*	*Points*	*C.A.*	*Score*	*Points*	*C.A.*	*Score*	*Points*
Less than								
6 yr. norm	0	− .82		45	3.04	13 year	..	...
	1	− .73		46	3.10		90	5.31
	2	− .68		47	3.16		91	5.36
	3	− .54		48	3.21		92	5.41
	4	− .41		49	3.27		93	5.45
	5	− .27		50	3.33		94	5.50
	6	− .14		51	3.39		95	5.55
6 year	7	X	10 year	..	...		96	5.60
	8	+.14		52	3.44		97	5.64
	9	.27		53	3.49		98	5.69
	10	.41		54	3.55		99	5.74
	11	.54		55	3.60	14 year	100	5.79
	12	.68		56	3.65		101	5.83
7 year	..	...		57	3.71		102	5.88
	13	.73		58	3.76		103	5.93
	14	.82		59	3.81		104	5.98
	15	.92		60	3.86		105	6.03
	16	1.02		61	3.92		106	6.08
	17	1.12		62	3.97		107	6.14
	18	1.21		63	4.02	15 year	108	6.20
	19	1.31		64	4.08		109	6.26
	20	1.41		65	4.13		110	6.33
	21	1.51	11 year	66	4.18		111	6.39
	22	1.60		67	4.23		112	6.45
8 year	..	...		68	4.29		113	6.51
	23	1.66		69	4.34		114	6.57
	24	1.73		70	4.39		115	6.63
	25	1.79		71	4.45		116	6.69
	26	1.86		72	4.50		117	6.76
	27	1.92		73	4.54	16 year	...	...
	28	1.99		74	4.59		118	6.82
	29	2.05		75	4.64		119	6.88
	30	2.12		76	4.68		120	6.94
	31	2.18		77	4.73		121	7.00
	32	2.25		78	4.77		122	7.06
	33	2.31	12 year	..	...		123	7.13
	34	2.38		79	4.82		124	7.19
	35	2.44		80	4.86		125	7.25
	36	2.51		81	4.91		126	7.31
9 year	37	2.57		82	4.95		127	7.37
	38	2.64		83	5.00		128	7.43
	39	2.70		84	5.04		129	7.49
	40	2.75		85	5.09		130	7.56
	41	2.81		86	5.13		131	7.62
	42	2.87		87	5.17		132	7.68
	43	2.93		88	5.22		133	7.75
	44	2.98		89	5.26			

Table X

For Converting Total Point Scores into Years and Months of Mental Age, Form II (Retest)

Years	Months											
	0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
6	*−3.51*	*−2.93*	*−2.34*	*−1.76*	*−1.17*	*−.59*	X	.59	1.17	1.76	2.34	2.93
7	3.51	4.10	4.68	5.27	5.85	6.44	7.02	7.50	7.98	8.45	8.93	9.41
8	9.89	10.37	10.85	11.32	11.80	12.28	12.76	13.17	13.58	13.98	14.39	14.80
9	15.21	15.61	16.02	16.43	16.84	17.24	17.65	18.00	18.36	18.71	19.06	19.41
10	19.77	20.12	20.47	20.82	21.18	21.53	21.88	22.19	22.51	22.82	23.13	23.44
11	23.76	24.07	24.38	24.69	25.01	25.32	25.63	25.89	26.15	26.41	26.67	26.93
12	27.19	27.45	27.71	27.97	28.23	28.49	28.75	28.94	29.14	29.33	29.52	29.72
13	29.91	30.10	30.30	30.49	30.68	30.88	31.07	31.23	31.38	31.54	31.70	31.85
14	32.01	32.17	32.32	32.48	32.64	32.79	32.95	33.08	33.21	33.34	33.47	33.60
15	33.73	33.86	33.99	34.12	34.25	34.37	34.50	34.63	34.76	34.89	35.02	35.15
16	35.28	35.41	35.54	35.67	35.80	35.93	36.06	*36.19*	*36.32*	*36.45*	*36.58*	*36.71*
17	*36.84*	*36.97*	*37.10*	*37.23*	*37.36*	*37.49*	*37.62*	*37.75*	*37.88*	*38.01*	*38.14*	*38.27*
18	*38.40*	*38.53*	*38.66*	*38.79*	*38.92*	*39.05*	*39.18*	*39.31*	*39.44*	*39.57*	*39.70*	*39.83*
19	*39.96*	*40.09*	*40.22*	*40.35*	*40.48*	*40.61*	*40.74*	*40.87*	*41.00*	*41.13*	*41.26*	*41.39*
20	*41.52*	*41.65*	*41.78*	*41.91*	*42.04*	*42.17*	*42.30*	*42.43*	*42.56*	*42.69*	*42.82*	*42.95*
21	*43.08*	*43.21*	*43.34*	*43.47*	*43.60*	*43.73*	*43.86*	*43.99*	*44.12*	*44.25*	*44.38*	*44.51**

*Add 1.56 per year: 0.13 per month.

CHAPTER IV

EXTRAPOLATION

FORM I of this performance scale has norms for chronological ages 5.5 to 15.5 years, inclusive. Form II has retest norms for chronological ages 6.5 to 16.5 years, inclusive. But patients are tested whose scores fall outside these norms. How are mental ages to be calculated for these?

The scale has been extended downward six months below the lowest year norm, by assuming a constant rate of decrease below that norm. These values are included in Table X, but are printed in italics. It is felt that these values frequently fail to give reliable ratings partly because changes in rates of growth occur rapidly at these lower levels, and partly because dull young children often are unable to do justice to themselves in many of these test situations, owing to the nature of the tasks.

Extending the scale at the upper end is somewhat more satisfactory, inasmuch as changes in rate of growth occur much more gradually. Values added above the highest norm, like those added to the lower end of the scale, are printed in italics. However, we occasionally meet an exceptional score that falls even beyond these values. To calculate a (hypothetical) mental age in such a case, subtract the highest year norm from the point score. Divide this by the point increment of the last year interval (1.77) and add this quotient to the highest mental age indicated on the scale. A patient earns a point score of 51.09. We subtract from this the highest point norm,

45.31, and obtain a difference of 5.78. We divide this by 1.77, the difference between the fifteen and fourteen year point norms, and obtain a quotient of 3.26. We add this to 15.5, the highest chronological age for which a year point norm was available, and obtain a (hypothetical) mental age of 18.76, or eighteen years and nine months.

Although mental ages obtained in this fashion and the resulting IQ's mean nothing in particular at the present time, they do afford a means of expressing degrees of superiority over the highest year norm. In time they may become standardized against life situations so that we can know what to expect of an adult with a performance scale IQ of 130 as compared with an adult who has earned a performance scale IQ of only 110. For the present, however, until such practical norms can be established, we are less concerned with the degree of superiority of our patient over the average fifteen-year-old, than we are with his behavior during the examination, and what he reveals of his personality by his reaction to the various test situations.

It is sometimes difficult to make a superior adolescent put forth his best effort, as many of the tests appear to him to be too simple to challenge his ability. The maze, with its maximum score of 18, is definitely short scale. The Knox Cube test does not leave a wide enough margin for careless error. In spite of these limitations of the performance scale, a girl with a chronological age of fourteen years and eleven months, and a Kuhlmann-Binet IQ of 184, earned an IQ of 193 on Form I of the performance scale. Obviously, then, the scale as a whole is not short scale in the usual sense of the term. A boy with a chronological age of 14.0 and a Kuhlmann-

Binet IQ of 138 earned a performance scale IQ of 169. Another boy, with a chronological age of 13.5 and a Kuhlmann-Binet IQ of 154, earned a performance scale IQ of 120. A girl with a chronological age of 15.66 and a Kuhlmann-Binet IQ of 148, earned a performance scale IQ of 127. There does not seem to be any constant tendency for the performance scale ratings to vary either above or below the Binet IQ's until that end of the Stanford-Binet scale is reached where the latter consistently measures short.

There seems to be no need to rationalize the discrepancies between the Binet and performance scale ratings obtained in this no-man's-land beyond the last year norm. Instead, it seems surprising that two separate sets of figures, each a flight into the blue, with nothing in common between them except that each starts from a fifteen year norm, should show any measure of agreement.

CHAPTER V

WHEN A TEST IS OMITTED

The scale has been standardized as a whole. The attitude of a patient toward each successive test is dependent upon his experience with preceding tests. There is probably more of emotion than of practice effect as such involved in this. If the present norms are to be used, therefore, the scale should be used as a whole, with the tests presented to the patient in the same order in which they were presented during the process of standardization.

But it happens at times that a score on some test is rendered invalid for one reason or another: a stop watch refuses to start, the child runs to the window to see a fire engine, or an interruption from without occurs. Obviously, there should be a way to calculate a rating from the valid scores that were obtained.

Let us suppose that a successful examination has been given up to the Mare and Foal picture completion test. At this point, a hitherto well-behaved stop watch suddenly refuses to move. The child completes the test, and you praise him. As you have long since lost all faith in stop watches and always go prepared for such emergencies, the examination proceeds without interruption. You have no score for the Mare and Foal test, but you obtain a total point score from the remaining tests in the usual manner.

The patient earned 23.81 points. Consulting Table IV we see that this would have to fall between the total point score for the eight year and that of the nine year

level. From this same table we see that the point norm for the Mare and Foal test at the eight year level is 2.35. For the nine year level it is 3.02. Subtracting these values from the total point norms of their respective levels, we now have a new total point score at the eight year level of 19.51 (21.86 − 2.35) and a new total point norm at the nine year level of 24.89 (27.91 − 3.02). The distance between these two new total point norms is 5.38 points.

The child's total point score is 23.81 points. This falls 4.30 points above the eight year total point norm. This will yield a mental age, therefore, of 8.5 years, plus 4.30/5.38. Reducing the fraction to a decimal, we have 8.5 + .799 years, or approximately nine years and three months (9.299 years).

It is much simpler, and therefore less subject to error, to reduce months to a decimal fraction of a year rather than to reduce years to months, as so many of us were taught to do, in all calculations involving mental age. The values are quickly learned and are convenient to use.

It is sometimes necessary to remind ourselves that the norms fall at the mid-point of the age group: the five year norm corresponding to a mental age of five years and six months.

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